RDR-HX900

RMT-D206P

SERVICE MANUAL

AEP Model
UK Model

Self Diagnosis Supported model

DVD+ReWritable

VIDEO/R/RW

COMPACT disc DIGITAL VIDEO

VIDEOplus+

SPECIFICATIONS

System

Laser: Semiconductor laser
Channel coverage:
PAL/SECAM (B/G, D/K, I, L)
VHF: E2 to E12, R1 to R12, F1 to F10, Italian A to H, Ireland A to J, South Africa 4 to 13/
UHF: E21 to E69, R21 to R69, B21 to B69, F21 to F69/CATV: S01 to S05, S1 to S20, France B to Q/HYPER: S21 to S41

The above channel coverage merely ensures the channel reception within these ranges. It does not guarantee the ability to receive signals in all circumstances.

Video reception: Frequency synthesizer system
Audio reception: Split carrier system
Aerial out: 75-ohm asymmetrical aerial socket
Timer: Clock: Quartz locked/Timer indication: 24-hour cycle (digital)/Power back-up duration: 1 hour
Video recording format: MPEG Video
Audio recording format/applicable bit rate: Dolby Digital/2 ch, 256 kbps

When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack are converted to 48 kHz sampling frequency.

Inputs and outputs

LINE 2 OUT
(AUDIO): Phono jack/2 Vrms/10 kilohms
(VIDEO): Phono jack/1.0 Vp-p
(S VIDEO): 4-pin mini DIN/Y:1.0 Vp-p, C: 0.3 Vp-p (PAL)
LINE 2 IN/LINE 4 IN
(AUDIO): Phono jack/2 Vrms/more than 22 kilohms
(VIDEO): Phono jack/1.0 Vp-p
(S VIDEO): 4-pin mini DIN/Y:1.0 Vp-p, C: 0.3 Vp-p (PAL)
LINE 1 -TV: 21-pin
CVBS IN/OUT
S-Video/RGB OUT (upstream)
LINE 3/DECODER: 21-pin
CVBS IN/OUT
S-Video/RGB IN
S-Video OUT (downstream)
Decoder
DV IN: 4-pin/i.LINK S100
DIGITAL OUT (OPTICAL): Optical output jack/–18 dBm (wave length: 660 nm)
DIGITAL OUT (COAXIAL): Phono jack/0.5 Vp-p/75 ohms
COMPONENT VIDEO OUT
(Y, P_B/C_B, P_R/C_R):
Phono jack/Y: 1.0 Vp-p, P_B/C_B: 0.7 Vp-p, P_R/C_R: 0.7 Vp-p

General

Power requirements: 220-240 V AC, 50/60 Hz
Power consumption: 54 W
Dimensions (approx.): 430 × 89 × 346 mm (width/height/depth) incl. projecting parts
Hard disk drive capacity: 160 GB
Mass (approx.): 5.9 kg
Operating temperature: 5 ºC to 35 ºC
Operating humidity: 25 % to 80 %
Supplied accessories:
Audio/video cord (1)
Mains lead (1)
Aerial cable (1)
Remote commander (remote) (1)
R6 (size AA) batteries (2)

Specifications and design are subject to change without notice.

DVD RECORDER

SONY

WARNING!!

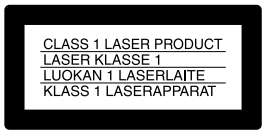
WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

CAUTION:

The use of optical instrument with this product will increase eye hazard.

CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.



SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

: LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
  Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
  Soldering irons using a temperature regulator should be set to about 350°C.
  Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
  Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
  It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

TABLE OF CONTENTS

SERVICE NOTE

1. DISK REMOVAL PROCEDURE IF THE TRAY CANNOT BE EJECTED (FORCED EJECTION) ····· 5

1. GENERAL

WARNING ····· 1-1
Precautions ····· 1-1
Ways to Use Your DVD Recorder ····· 1-1
Quick Guide to Disc Types ····· 1-2
Hookups and Settings ····· 1-3
Hooking Up the Recorder ····· 1-3
Step 1: Unpacking ····· 1-3
Step 2: Connecting the Aerial Cable ····· 1-3
Step 3: Connecting the Video Cords ····· 1-3
Step 4: Connecting the Audio Cords ····· 1-4
Step 5: Connecting the Mains Lead ····· 1-4
Step 6: Preparing the Remote ····· 1-4
Step 7: Easy Setup ····· 1-5
Connecting a VCR or Similar Device ····· 1-6
Connecting to a Satellite or Digital Tuner ····· 1-7
Connecting a PAY-TV/Canal Plus Decoder ····· 1-7
Guide to Displays ····· 1-8
Using the On-Screen Menus ····· 1-8
Using the Title List ····· 1-8
Using the "Disc Info" Screen (disc settings) ····· 1-8
Checking the Play Information and Playing Time ····· 1-9
How to Enter Characters ····· 1-10
Recording ····· 1-10
Before Recording ····· 1-10
Timer Recording (Standard/VIDEO Plus+) ····· 1-10
Checking/Changing/Cancelling Timer Settings (Timer List) · 1-11
Recording Without the Timer ····· 1-12
Recording From Connected Equipment With a Timer (Synchro Rec) ····· 1-12
Recording From Connected Equipment Without a Timer ··· 1-13
Playback ····· 1-13
Playing ····· 1-13
Chasing Playback/Simultaneous Rec and Play ····· 1-15
Searching for a Title/Chapter/Track, etc. ····· 1-15
Playing MP3 Audio Tracks ····· 1-15
Editing ····· 1-16
Before Editing ····· 1-16
Editing a Title ····· 1-16
Creating and Editing a Playlist ····· 1-17
Dubbing (HDD ⟷ DVD) ····· 1-18
Before Dubbing ····· 1-18
Dubbing a Single Title (Title Dub) ····· 1-18
Dubbing Multiple Titles (Dub Selected Titles) ····· 1-18
DV Dubbing (DV ⟶ HDD/DVD) ····· 1-19
Before DV Dubbing ····· 1-19
Recording an Entire DV Format Tape (One Touch Dubbing) ····· 1-19
Program Edit ····· 1-20
Settings and Adjustments ····· 1-20
Using the Setup Displays ····· 1-20
Aerial Reception and Language Settings (Settings) ····· 1-21
Video Settings (Video) ····· 1-22
Audio Settings (Audio) ····· 1-22
Recording and Parental Control Settings (Features) ····· 1-23
Disc and Remote Control Settings/ Factory Settings (Options) ····· 1-24
Easy Setup (Resetting the Recorder) ····· 1-24
Additional Information ····· 1-24
Troubleshooting ····· 1-24
Self-diagnosis Function (When letters/ numbers appear in the display) ····· 1-26
Notes About This Recorder ····· 1-26
Specifications ····· 1-26
About i.LINK ····· 1-26
Guide to Parts and Controls ····· 1-27
Glossary ····· 1-28
Language Code List ····· 1-28

2. DISASSEMBLY

2-1. UPPER CASE ····· 2-2
2-2. ER-25 BOARD ····· 2-2
2-3. D.C. FAN ····· 2-3
2-4. RD-50 BOARD ····· 2-3
2-5. HDD, CN-199 BOARD ····· 2-4
2-6. POWER BLOCK ····· 2-5
2-7. RD BRACKET ····· 2-5
2-8. FRONT PANEL SECTION ····· 2-6
2-9. FUNCTION DOOR ····· 2-7
2-10. DVD DRIVE ····· 2-8
2-11. FR-215 BOARD, FL-140 BOARD ····· 2-9
2-12. REAR PANEL ····· 2-9
2-13. AV-84 BOARD ····· 2-10
2-14. CIRCUIT BOARDS LOCATION ····· 2-11

3. BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM (1/3) ····· 3-1
3-2. OVERALL BLOCK DIAGRAM (2/3) ····· 3-3
3-3. OVERALL BLOCK DIAGRAM (3/3) ····· 3-5
3-4. POWER BLOCK DIAGRAM (1/3) ····· 3-7
3-5. POWER BLOCK DIAGRAM (2/3) ····· 3-9
3-6. POWER BLOCK DIAGRAM (3/3) ····· 3-11

4. SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM ····· 4-1
4-2. SCHEMATIC DIAGRAMS ····· 4-3
WAVEFORMS ····· 4-4
• AV-84 (1/8) (POWER) SCHEMATIC DIAGRAM ····· 4-7
• AV-84 (2/8) (AUDIO IN) SCHEMATIC DIAGRAM ····· 4-9
• AV-84 (3/8) (AUDIO OUT) SCHEMATIC DIAGRAM ····· 4-11
• AV-84 (4/8) (TUNER) SCHEMATIC DIAGRAM ····· 4-13
• AV-84 (5/8) (SYSTEM CONTROL) SCHEMATIC DIAGRAM ····· 4-15
• AV-84 (6/8) (VIDEO IN) SCHEMATIC DIAGRAM ····· 4-17
• AV-84 (7/8) (VIDEO OUT) SCHEMATIC DIAGRAM ····· 4-19
• AV-84 (8/8) (CONNECTOR) SCHEMATIC DIAGRAM ····· 4-21
• CN-199 (RELAY) SCHEMATIC DIAGRAM ····· 4-23
• CN-220 (RELAY) SCHEMATIC DIAGRAM ····· 4-25
• ER-25 (ER AV IN/OUT) SCHEMATIC DIAGRAM ····· 4-27
• FL-140 (DV/LINE 2 IN/FL DRIVER) SCHEMATIC DIAGRAM ····· 4-29
• FR-215 (LED DRIVE, FUNCTION KEY) SCHEMATIC DIAGRAM ····· 4-31
• RD-50 (1/22) (CONNECTOR) SCHEMATIC DIAGRAM ····· 4-33
• RD-50 (2/22) (VIDEO DECODER) SCHEMATIC DIAGRAM ····· 4-35
• RD-50 (3/22) (AV GLUE) SCHEMATIC DIAGRAM ····· 4-37

• RD-50 (4/22) (AV ENCODER)
SCHEMATIC DIAGRAM ····· 4-39
• RD-50 (5/22) (MR PROCESS)
SCHEMATIC DIAGRAM ····· 4-41
• RD-50 (6/22) (AV DECODER)
SCHEMATIC DIAGRAM ····· 4-43
• RD-50 (7/22) (SDRAM)
SCHEMATIC DIAGRAM ····· 4-45
• RD-50 (8/22) (NAZCA)
SCHEMATIC DIAGRAM ····· 4-47
• RD-50 (9/22) (SDRAM)
SCHEMATIC DIAGRAM ····· 4-49
• RD-50 (10/22) (AUDY, DAC)
SCHEMATIC DIAGRAM ····· 4-51
• RD-50 (11/22) (JTAG)
SCHEMATIC DIAGRAM ····· 4-53
• RD-50 (12/22) (SH)
SCHEMATIC DIAGRAM ····· 4-55
• RD-50 (13/22) (SDRAM, NAND FLASH)
SCHEMATIC DIAGRAM ····· 4-57
• RD-50 (14/22) (SWA/UNSW BUFFER-1)
SCHEMATIC DIAGRAM ····· 4-59
• RD-50 (15/22) (SWA/UNSW BUFFER-2)
SCHEMATIC DIAGRAM ····· 4-61
• RD-50 (16/22) (FLASH ROM)
SCHEMATIC DIAGRAM ····· 4-63
• RD-50 (17/22) (GPS3 (HOST GLUE))
SCHEMATIC DIAGRAM ····· 4-65
• RD-50 (18/22) (PLL)
SCHEMATIC DIAGRAM ····· 4-67
• RD-50 (19/22) (POWER)
SCHEMATIC DIAGRAM ····· 4-69
• RD-50 (20/22) (DV PROCESS)
SCHEMATIC DIAGRAM ····· 4-71
• RD-50 (21/22) (DV INTERFACE)
SCHEMATIC DIAGRAM ····· 4-73
• RD-50 (22/22) (SRC)
SCHEMATIC DIAGRAM ····· 4-75
• TX-003 (TELETEXT DIP)
SCHEMATIC DIAGRAM ····· 4-77
• SWITCHING REGULATOR (SRV1470EK) (POWER SUPPLY)
SCHEMATIC DIAGRAM ····· 4-79

5. IC PIN FUNCTION DESCRIPTION

5-1. IT CONTROL IC (IC603: N603H2MC-511FPUO (AV-84 BOARD)) ····· 5-1

6. SERVICE MODE

6-1. Checking Item ····· 6-1
6-2. Screen Transition in the Service Mode ····· 6-2
6-3. Service Mode Menu Items and Description ····· 6-3
6-4. Device Check Menu (1/2) ····· 6-3
6-5. Device Check Menu (2/2) ····· 6-3
6-6. Path Check Menu (1/2) ····· 6-4
6-7. Path Check Menu (2/2) ····· 6-4
6-8. Hard Disk Check Menu ····· 6-4
6-9. Device AUTO Check Screen Transition ····· 6-5
6-10. Device Individual Check, Screen Transition ····· 6-5
6-11. Path Individual Check (Pasted Screen Check (visual check) and data check (digital video data auto-check)) Screen Transition ····· 6-6
6-12. Path Individual Check (Audio output Confirmation) Screen Transition ····· 6-6

7. ADJUSTMENT

1. Videl Levl Adjustment (RD-046 Board) ····· 7-1
2. Component Video Output Level Adjustment ····· 7-1
3. S-Video Output S-Y Check ····· 7-1
4. S-Video Output S-C Level Check ····· 7-2
5. Component Video Output Y Check ····· 7-2
6. Component Video Output B-Y Chec ····· 7-2
7. Component Video Output R-Y Check ····· 7-2

8. REPAIR PARTS LIST

8-1. EXPLODED VIEWS
8-1-1. OVERALL SECTION ····· 8-1
8-1-2. FRONT PANEL SECTION ····· 8-2
8-1-3. DVD DRIVE ····· 8-3
8-1-4. CHASSIS BLOCK ····· 8-4
8-2. ELECTRICAL PARTS LIST ····· 8-5

SERVICE NOTE

1. DISK REMOVAL PROCEDURE IF THE TRAY CANNOT BE EJECTED (FORCED EJECTION)

1. Remove the upper case.
2. Remove the RD-50 board, RD bracket.
3. IInsert the stiff wire in the hole and eject the tray.

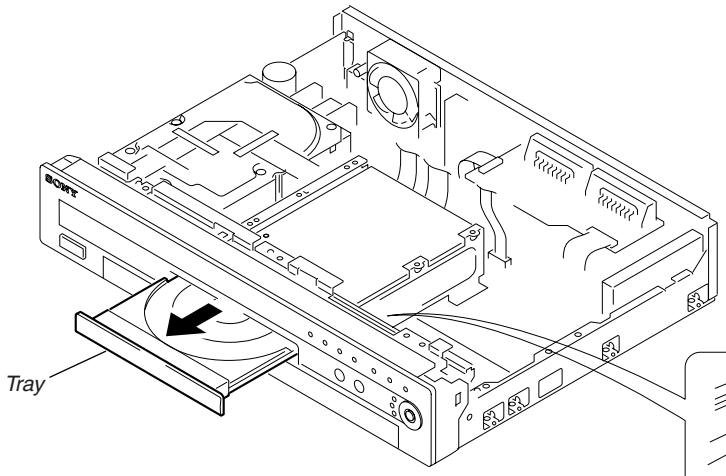


Fig. 1

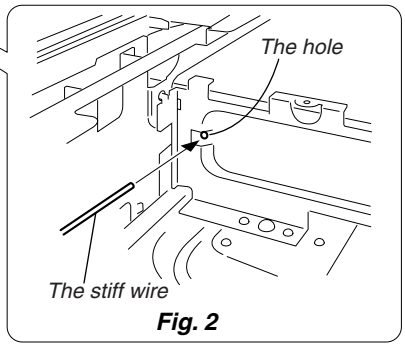


Fig. 2

NOTES DURING THE FORCED EJECTION

1. If the forced ejection is executed while a blank disc media (DVD±RW, ±R) exists on the tray

• Insert a DVD-ROM (DVD test disc, DVD software available on the market, or the like) in the tray and then close the tray.

Note1: If you close the tray while it is empty, ejection of the tray becomes impossible.

Note2: If you close the tray with a CD disc inserted in it, the CD can be ejected. However, if you close the tray while it is empty, there can be a case that ejection of the tray becomes impossible.

Note3: Even if you replace the DVD drive unit while the tray remains under the state as described above, the situation cannot be improved.

2. If the tray cannot be ejected while the disc is not inserted

• Execute the forced ejection.

• Insert a DVD-ROM (DVD test disc, DVD software available on the market, or the like) on the tray and try to close the tray.
(There are cases that it recovers the trouble.)

3. Contents of forcedly ejected blank disc media (DVD±RW, ±R) can be damaged. (There can be a case that initialization is also impossible.)

MEMO

SECTION 1
GENERAL

This section is extracted from instruction manual.
(RDR-HX900/HX1000 : 2-050-330-11 (1))

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.
To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.
The mains lead must only be changed at a qualified service shop.

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

CAUTION

The use of optical instruments with this product will increase eye hazard. As the laser beam used in this DVD recorder is harmful to eyes, do not attempt to disassemble the cabinet. Refer servicing to qualified personnel only.

This label is located on the laser protective housing inside the enclosure.

Notice for customers in the United Kingdom and Republic of Ireland

A moulded plug complying with BS1363 is fitted to this equipment for your safety and convenience.
Should the fuse in the plug supplied need to be replaced, a 5 AMP fuse approved by ASTA or BSI to BS1362, (i.e., marked with ⓐ or ⓑ mark) must be used.
If the plug supplied with this equipment has a detachable fuse cover, be sure to attach the fuse cover after you change the fuse. Never use the plug without the fuse cover. If you should lose the fuse cover, please contact your nearest Sony service station.

Precautions

- This unit operates on 220 – 240 V AC, 50/60 Hz. Check that the unit's operating voltage is identical with your local power supply.
- To prevent fire or shock hazard, do not place objects filled with liquids, such as vases, on the apparatus.

VIDEO Plus+ and PlusCode are registered trademarks of Gemstar Development Corporation. The VIDEO Plus+ system is manufactured under license from Gemstar Development Corporation.

Precautions

This equipment has been tested and found to comply with the limits set out in the EMC Directive using a connection cable shorter than 3 metres.

On safety

Should any solid object or liquid fall into the cabinet, unplug the recorder and have it checked by qualified personnel before operating it any further.

On power sources

- The recorder is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the recorder itself has been turned off.
- If you are not going to use the recorder for a long time, be sure to disconnect the recorder from the wall outlet. To disconnect the AC power cord (mains lead), grasp the plug itself; never pull the cord.
- Before disconnecting the AC power cord (mains lead), check that the recorder's hard disk is not operating (recording or dubbing) on the front panel display.

On placement

- Place the recorder in a location with adequate ventilation to prevent heat build-up in the recorder.
- Do not place the recorder on a soft surface such as a rug that might block the ventilation holes.
- Do not place the recorder in a confined space such as a bookshelf or similar unit.
- Do not place the recorder in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.
- Do not place the recorder in an inclined position. It is designed to be operated in a horizontal position only.
- Keep the recorder and discs away from equipment with strong magnets, such as microwave ovens, or large loudspeakers.
- Do not place heavy objects on the recorder.

On recording

- Note that the contents of the recording cannot be compensated for under any and all conditions, including conditions that may arise due to a malfunction of this unit.
- Make trial recordings before making the actual recording.

About the hard disk drive

The hard disk has a high storage density, which enables long recording durations and quick access to the written data. However, it can easily be damaged by shock, vibration or dust, and should be kept away from magnets. To avoid losing important data, observe the following precautions.

- Do not apply a strong shock to the recorder.
- Do not place the recorder in a location subject to mechanical vibrations or in an unstable location.
- Do not move the recorder with its mains lead connected.
- Do not disconnect the mains lead while the power is on.
- Do not use the recorder in a place subject to extreme changes in temperature (temperature gradient less than 10 °C/hour).
- Do not attempt to change the hard disk. This may result in a malfunction. Should the hard disk be damaged, you cannot recover lost data. The hard disk is only a temporary storage space.
- The recorded contents of the hard disk drive may be erased or destroyed if the unit should malfunction for whatever reason, or if the hard disk drive is repaired, modified or replaced. Note that the contents of the recording cannot be compensated for under any and all conditions.

Copyrights

- Television programmes, films, video tapes, discs, and other materials may be copyrighted. Unauthorized recording of such material may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or programme owner.
- This product incorporates copyright protection technology that is protected by U.S. patents and other intellectual property rights. Use of this copyright protection technology must be authorized by Macrovision, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision. Reverse engineering or disassembly is prohibited.

Copy guard function

Since the recorder has a copy guard function, programmes received through an external tuner (not supplied) may contain copy protection signals (copy guard function) and as such may not be recordable, depending on the type of signal.

IMPORTANT NOTICE

Caution: This recorder is capable of holding a still video image or on-screen display image on your television screen indefinitely. If you leave the still video image or on-screen display image displayed on your TV for an extended period of time you risk permanent damage to your television screen. Plasma display panels and projection televisions are especially susceptible to this.

If you have any questions or problems concerning your recorder, please consult your nearest Sony dealer.

About this manual

Check your model name

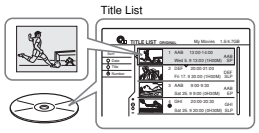
The instructions in this manual are for 2 models: RDR-HX900 and RDR-HX1000. Check your model name by looking at the front panel of the recorder.

- In this manual, the internal hard disk drive is written as "HDD," and "disc" is used as a general reference for the HDD, DVDs, or CDs unless otherwise specified by the text or illustrations.
- Instructions in this manual describe the controls on the remote. You can also use the controls on the recorder if they have the same or similar names as those on the remote.
- The on-screen display illustrations used in this manual may not match the graphics displayed on your TV screen.
- The explanations regarding DVDs in this manual refer to DVDs created on this recorder. The explanations do not apply to DVDs that are created on other recorders and played back on this recorder.

Ways to Use Your DVD Recorder

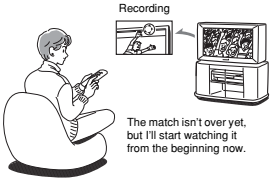
Quick access to recorded titles – Title List

➡ Display the Title List to see all of the titles on the disc, including recording date, channel, recording mode and thumbnail image (page 33).



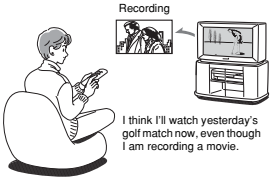
Play the beginning of a title while it is being recorded – Chasing Playback

➡ If you are using a DVD-RW (VR mode) or the HDD, you can watch a programme from the beginning while it is being recorded (page 60).



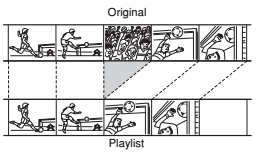
Watching one title while recording another – Simultaneous Rec and Play

➡ If you are using a DVD-RW (VR mode) or the HDD, you can watch a previously recorded programme while recording another programme on the same disc (page 60).



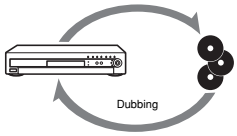
Creating your own programme – Playlist

➡ Record a programme on a DVD-RW (VR mode), then delete, move and add scenes at will to create your own, original programme (page 68).



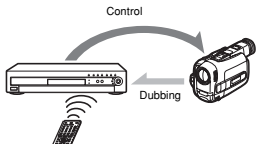
Copying a recorded title to and from the HDD – Dubbing (HDD ⟷ DVD)

➡ Create copies of your favourite titles for safekeeping by dubbing them to a DVD, or make a copy of your friend's recordings by dubbing them to the HDD (page 72).



Automatic dubbing of DV tapes – DV Dubbing (DV ⟶ HDD/DVD)

➡ Connect your digital video camera to the DV IN jack and automatically dub the entire contents or just selected scenes to a DVD disc (page 77).



A list of recordable and playable discs is on page 8.

Quick Guide to Disc Types

Recordable and playable discs

Type		Disc Logo	Icon used in this manual	Formatting (new discs)	Compatibility with other DVD players (finalizing)	Recording Features				Editing Features			
						Rewrite (page 41)	Auto Chapter (page 93)	Manual Chapter (page 68)	Record 16:9 sizes (page 49)	Change title name (page 65)	Delete title (page 66)	A-B Erase (page 66)	Playlist (page 68)
Hard disk drive (internal)		HDD	HDD	(Formatting unnecessary)	—	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
DVD+RW		RW DVD+ReWritable	+RW	Automatically formatted	Playable on DVD+RW compatible players (automatically finalized)	Yes	Yes	No	No	Yes	Yes	Yes	No
DVD-RW	VR mode	DVD RW	-RWVR	Format in VR mode (page 36)	Playable only on VR mode compatible players (finalization unnecessary)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Video mode		-RWVideo	Format in Video mode (page 36)	Playable on most DVD players (finalization necessary) (page 37)	Yes	Yes	No	Yes *2	Yes	Yes	No	No
DVD+R		RW DVD+R	+R	Automatically formatted	Playable on most DVD+R compatible players (finalization necessary) (page 37)	No	Yes	No	No	Yes	Yes *3	No	No
DVD-R		DVD R 4.7	-R	Automatically formatted	Playable on most DVD players (finalization necessary) (page 37)	No	Yes	No	Yes *2	Yes	Yes *3	No	No

Usable disc versions (as of May 2004)
- 4x-speed or slower DVD+RWs
- 2x-speed or slower DVD-RWs (Ver.1.1, Ver.1.1 with CPRM*1)
- 8x-speed or slower DVD+Rs
- 8x-speed or slower DVD-Rs (Ver.2.0)

"DVD+RW," "DVD-RW," "DVD+R," and "DVD-R," are trademarks.

*1 CPRM (Content Protection for Recordable Media) is a coding technology that protects copyrights for images.

*2 Only if the recording mode is SP, HSP, or HQ, and "DVD Rec Picture Size" is set to "16:9."

*3 Erasing titles does not free up disc space.

Discs that cannot be recorded on
- 4x-speed compatible DVD-RWs (Ver. 1.2/4x)
- DVD-RWs (Ver.1.0)
- DVD+RWs that are not 2.4x-speed compatible
- Dual layer discs
- 8 cm discs

→continued

Playable discs

Type	Disc Logo	Icon used in this manual	Characteristics
DVD VIDEO	DVD VIDEO	DVD	Discs such as movies that can be purchased or rented
VIDEO CD	COMPACT disc DIGITAL VIDEO	VCD	VIDEO CDs or CD-Rs/CD-RWs in VIDEO CD/Super VIDEO CD format
CD	COMPACT disc DIGITAL AUDIO	CD	Music CDs or CD-Rs/CD-RWs in music CD format that can be purchased
DATA CD	COMPACT disc Recordable ReWritable	DATA CD	CD-ROMs/CD-Rs/CD-RWs created on a PC or similar device in music format containing MP3 audio tracks

Discs that cannot be played
- All CD-ROMs (including PHOTO CDs)
- CD-Rs/CD-RWs, other than those recorded in music CD format, MP3 format, or Video CD format
- Data part of CD-Extras
- DVD-ROMs
- DVD Audio discs
- DVD-RAMs
- HD layer on Super Audio CDs
- DVD VIDEOs with a different region code (page 11)

Hint

This DVD recorder can play 8 cm CDs and 8 cm DVDs as well.

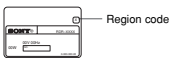
Note on playback operations of DVD VIDEOs/ VIDEO CDs

Some playback operations of DVD VIDEOs/ VIDEO CDs may be intentionally set by software producers. Since this recorder plays DVD VIDEOs/VIDEO CDs according to the disc contents the software producers designed, some playback features may not be available. Also, see the instructions supplied with the DVD VIDEOs/ VIDEO CDs.

Region code (DVD VIDEO only)

Your recorder has a region code printed on the rear of the unit and will only play DVD VIDEOs (playback only) labelled with identical region codes. This system is used to protect copyrights. DVD VIDEOs labelled (ALL) will also play on this recorder.

If you try to play any other DVD VIDEO, the message "Playback prohibited by region code." will appear on the TV screen. Depending on the DVD VIDEO, no region code indication may be labelled even though playing the DVD VIDEO is prohibited by area restrictions.



Music discs encoded with copyright protection technologies

This product is designed to play back discs that conform to the Compact Disc (CD) standard. Recently, various music discs encoded with copyright protection technologies are being marketed by some record companies. Please be aware that among those discs, there are some that do not conform to the CD standard and may not be playable by this product.

Notes
- Some DVD+RWs/DVD+Rs, DVD-RWs/DVD-Rs, or CD-RWs/CD-Rs cannot be played on this recorder due to the recording quality or physical condition of the disc, or the characteristics of the recording device and authoring software. The disc will not play if it has not been correctly finalized. For more information, see the operating instructions for the recording device.
- You cannot mix VR mode and Video mode on the same DVD-RW. To change the disc's format, reformat the disc (page 36). Note that the disc's contents will be erased after reformatting.
- You cannot shorten the time required for recording even with high-speed discs. Also, you cannot record on the disc if the disc is not 1x speed compatible.
- It is recommended that you use discs with "For Video" printed on their packaging.
- You cannot add new recordings to DVD-Rs or DVD-RWs (Video mode) that contain recordings made on other DVD equipment.
- In some cases, you may not be able to add new recordings to DVD+RWs that contain recordings made on other DVD equipment. If you do add a new recording, note that this recorder will rewrite the DVD menu.
- If the disc contains PC data unrecognizable by this recorder, the data may be erased.

Hooking Up the Recorder

Follow steps 1 to 7 to hook up and adjust the settings of the recorder.

Notes

- Plug cords securely to prevent unwanted noise.
- Refer to the instructions supplied with the components to be connected.
- You cannot connect this recorder to a TV that does not have a SCART or video input jack.
- Be sure to disconnect the mains lead of each component before connecting.

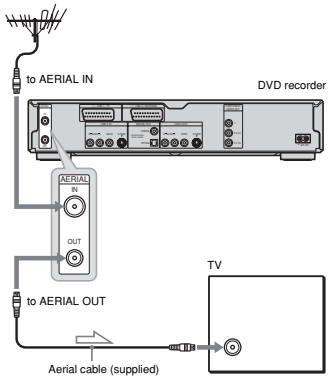
Step 1: Unpacking

Check that you have the following items:

- Audio/video cord (pinplug × 3 ⟷ pinplug × 3) (1)
- Mains lead (1)
- Aerial cable (1)
- Remote commander (remote) (1)
- R6 (size AA) batteries (2)

Step 2: Connecting the Aerial Cable

Connect the aerial cable by following the steps below. Do not connect the mains lead until you reach “Step 5: Connecting the Mains Lead” (page 19).

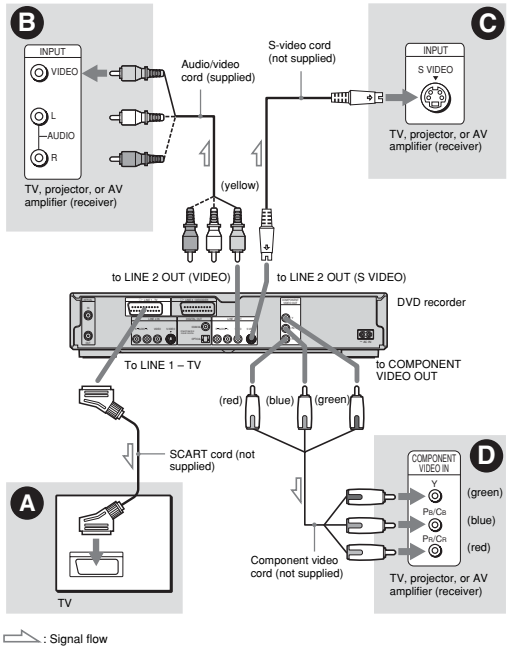


1 Disconnect the aerial cable from your TV and connect it to AERIAL IN on the rear panel of the recorder.

2 Connect AERIAL OUT of the recorder to the aerial input of your TV, using the supplied aerial cable.

Step 3: Connecting the Video Cords

Select one of the following patterns Ⓐ through Ⓓ, according to the input jack on your TV monitor, projector, or AV amplifier (receiver). This will enable you to view pictures. Audio connections are explained in “Step 4: Connecting the Audio Cords” (page 17).



Note

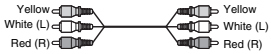
Do not connect more than one type of video cord between the recorder and your TV at the same time.

Ⓐ Connecting to a SCART input jack

Connect using a SCART cord (not supplied) to the LINE 1-TV jack and your TV. Be sure to make the connections firmly to avoid hum and noise.
See the operating instructions supplied with the TV to be connected. Also, when you set “Line1 Output” to “S Video” or “RGB” in step 15 of Easy Setup (page 22), use a SCART cord that conforms to the selected signal.

Ⓑ Connecting to a video input jack

Connect the yellow plug of the audio/video cord (supplied) to the yellow (video) jack. You will enjoy standard quality images.
Note that you cannot use the PROGRESSIVE button with this connection.



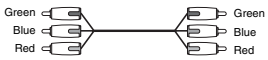
Ⓒ Connecting to an S VIDEO input jack

Connect using an S-video cord (not supplied). You will enjoy high quality images.
Note that you cannot use the PROGRESSIVE button with this connection.

Ⓓ Connecting to component video input jacks (Y, P_B/C_B, P_R/C_R)

Connect the component via the COMPONENT VIDEO OUT jacks using a component video cord (not supplied) or three video cords (not supplied) of the same kind and length. You will enjoy accurate colour reproduction and high quality images.

If your TV accepts progressive 525p/625p format signals, you must use this connection and set “Component Out” in Video Setup to “On” (page 89). Then press PROGRESSIVE on the remote to send progressive video signals. For details, see “Using the PROGRESSIVE button” (page 16).



When playing “wide screen” images

Some recorded images may not fit your TV screen. To change the aspect ratio, see page 88.

If you are connecting to a VCR

Connect your VCR to the LINE 3/DECODER jack on the recorder (page 26).

Notes

- When you connect the recorder to your TV via the SCART jacks, the TV’s input source is set to the recorder automatically when you start playback. If necessary, press TV/DVD on the remote to return the input to the TV.
- For correct SMARTLINK connection, you will need a SCART cord that has the full 21 pins. Refer to your TV’s instruction manual as well for this connection.
- If you connect this recorder to a TV with SMARTLINK, set “Line1 Output” to “Video” in step 15 of Easy Setup.

About the SMARTLINK features (for SCART connections only)

If the connected TV (or other connected equipment such as a set top box) complies with SMARTLINK, NexTView Link, MEGALOGIC*1, EASYLINK*2, CINEMALINK*2, Q-Link*3, EURO VIEW LINK*4, or T-V LINK*5, this recorder automatically runs the SMARTLINK function after you complete the connection pattern Ⓐ on page 14 (the SMARTLINK indicator lights up when you turn on your TV). You can enjoy the following SMARTLINK features.

- Preset Download
  You can download the tuner preset data from your TV to this recorder, and tune the recorder according to that data in Easy Setup. This greatly simplifies the Easy Setup procedure. Be careful not to disconnect the cables or exit the Easy Setup function during this procedure (page 22).

➡continued

- TV Direct Rec
  You can easily record what you are watching on your TV (page 48).
- One Touch Play
  You can turn on the recorder and TV, set the TV's input to the recorder, and start playback with one touch of the ▷ (play) button (page 55).
- One Touch Menu
  You can turn on the recorder and TV, set the TV to the recorder's channel, and display the Title List menu with one touch of the TITLE LIST button (page 55).
- One Touch Timer
  You can turn on the recorder and TV, set the TV to the recorder's channel, and display the timer programming menu with one touch of the TIMER button on the remote (page 44).
- Automatic Power Off
  The recorder will turn off automatically if the recorder is not used after you turn off the TV.
- NexTView Download
  You can easily set the timer by using the NexTView Download function on your TV. See your TV's instruction manual.

*1 "MEGALOGIC" is a registered trademark of Grundig Corporation.
*2 "EASYLINK" and "CINEMALINK" are trademarks of Philips Corporation.
*3 "Q-Link" is a trademark of Panasonic Corporation.
*4 "EURO VIEW LINK" is a trademark of Toshiba Corporation.
*5 "T-V LINK" is a trademark of JVC Corporation.

Hint
SMARTLINK also works with TVs or other equipment having EPG Timer Control, EPG Title Download, and Now Recording functions. For details, refer to the operating instructions supplied with your TV or other equipment.

Notes
- The SMARTLINK features are available only when "Video" is selected in "Line1 Output."
- The SMARTLINK features are not available for devices connected via the DVD recorder's LINE 3/DECODER jack.
- Not all TVs respond to the functions above.

Using the PROGRESSIVE button

By using the PROGRESSIVE button on the remote, you can select the signal format in which the recorder outputs video signals: interlace or progressive. Connect the recorder using the COMPONENT VIDEO OUT jacks (pattern ❶ on page 15), and set "Component Out" in Video Setup to "On" (page 89). Then press the PROGRESSIVE button. "PROGRESSIVE" appears in the front panel display when the recorder outputs progressive signals.

◆Progressive
Select this when:
– your TV accepts progressive signals, and,
– the TV is connected to the COMPONENT VIDEO OUT jacks.
Note that the pictures will not be clear or no picture will appear if you select progressive signal output when either of the above conditions is not met.

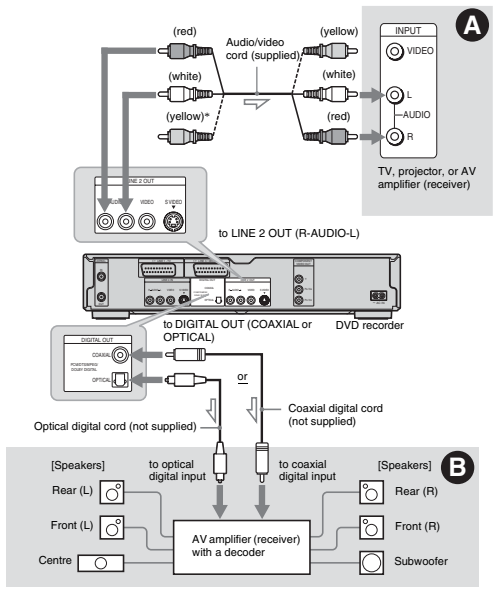
◆Interlace
Set to this position when:
– your TV does not accept progressive signals, or,
– your TV is connected to jacks other than the COMPONENT VIDEO OUT jacks (LINE OUT (VIDEO) or S VIDEO).

Hint
When you select progressive signal output, you can fine-tune the signal according to the type of software you are watching (page 89).

Note
Consumers should note that not all high definition television sets are fully compatible with this product and may cause artifacts to be displayed in the picture. In the case of 525/625 progressive scan picture problems, it is recommended that the user switch the connection to the 'standard definition' output. If there are questions regarding our TV set compatibility with this model 525p/625p DVD recorder, please contact our customer service centre.

Step 4: Connecting the Audio Cords

Select one of the following patterns ❶ or ❷, according to the input jack on your TV monitor, projector, or AV amplifier (receiver).
This will enable you to listen to sound.



: Signal flow

* The yellow plug is used for video signals (page 14).

Hint
For correct speaker location, see the operating instructions supplied with the connected components.

Note
Do not connect your TV's audio output jacks to the LINE IN (AUDIO L/R) jacks at the same time. This will cause unwanted noise to come from your TV's speakers.

→continued

❶ Connecting to audio L/R input jacks

This connection will use your TV's or stereo amplifier's (receiver's) two speakers for sound. Connect using the audio/video cord (supplied).

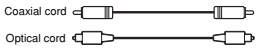
• Surround effect (page 56)
TV: Dynamic, Wide, Night

Stereo amplifier (receiver): Standard, Night

Note
Do not connect the LINE 4 IN (R-AUDIO-L) and LINE 2 OUT (R-AUDIO-L) jacks to your TV's audio output jacks at the same time. This will cause unwanted noise to come from your TV's speakers.

❷ Connecting to a digital audio input jack

If your AV amplifier (receiver) has a Dolby*1 Digital, DTS*2, or MPEG audio decoder and a digital input jack, use this connection.
Connect using a coaxial or optical digital cord (not supplied).



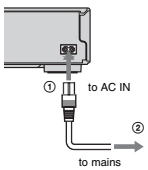
• Surround effect
Dolby Digital (5.1ch), DTS (5.1ch), MPEG audio (5.1ch)

*1 Manufactured under license from Dolby laboratories. "Dolby," "Pro Logic," and the double-D symbol are trademarks of Dolby Laboratories.
*2 "DTS" and "DTS Digital Out" are trademarks of Digital Theater Systems, Inc.

Notes
- After you have completed connection ❷, make the appropriate settings under "Audio Connection" in Easy Setup (page 22). If your AV amplifier (receiver) has an MPEG audio decoder function, set "MPEG" to "MPEG" in Audio Setup (page 92). Otherwise, no sound or a loud noise will come from your speakers.
- The surround sound effects of this recorder cannot be used with connection ❷.

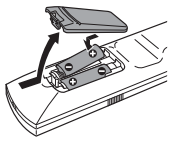
Step 5: Connecting the Mains Lead

Connect the supplied mains lead to the AC IN terminal of the recorder. Then plug the recorder and TV mains leads (power cords) into the mains. After you connect the mains lead, **you must wait for a short while before operating the recorder.** You can operate the recorder once the front panel display lights up and the recorder enters standby mode.
If you connect additional equipment to this recorder (page 26), be sure to connect the mains lead after all connections are complete.



Step 6: Preparing the Remote

You can control the recorder using the supplied remote. Insert two R6 (size AA) batteries by matching the ⊕ and ⊖ ends on the batteries to the markings inside the battery compartment. When using the remote, point it at the remote sensor ▣ on the recorder.



Notes
- If the supplied remote interferes your other Sony DVD recorder or player, change the command mode number for this recorder (page 21).
- Use the batteries correctly to avoid possible leakage and corrosion. Do not touch the liquid with bare hands should leakage occur. Observe the following:
  – Do not use a new battery with an old battery, or batteries of different manufacturers.
  – Do not attempt to recharge the batteries.
  – If you do not intend to use the remote for an extended period of time, remove the batteries.
  – If battery leakage occurs, wipe out any liquid inside the battery compartment, and insert new batteries.
- Do not expose the remote sensor (marked ▣ on the front panel) to strong light, such as direct sunlight or lighting apparatus. The recorder may not respond to the remote.

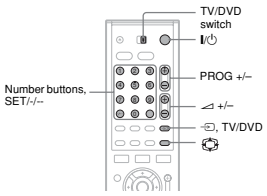
→continued

Controlling TVs with the remote

You can adjust the remote's signal to control your TV.
If you connected the recorder to an AV amplifier (receiver), you can use the supplied remote to control the AV amplifier's (receiver's) volume.

Notes

- Depending on the connected unit, you may not be able to control your TV or AV amplifier (receiver) with some or all of the buttons below.
- If you enter a new code number, the code number previously entered will be erased.
- When you replace the batteries of the remote, the code number may be reset to the default setting. Set the appropriate code number again.



1 Slide the TV/DVD switch to TV.

2 Hold down I/⏻.

3 Enter your TV's manufacturer code (see "Code numbers of controllable TVs" below) using the number buttons.

4 Release I/⏻.
When the TV/DVD switch is set to TV, the remote performs the following:

I/⏻	Turns your TV on or off
(volume) +/–	Adjusts the volume of your TV
PROG +/–	Selects the programme position on your TV
(wide mode)	Switches to or from the wide mode of a Sony wide-screen TV
(TV/video)	Switches your TV's input source
Number buttons and SET, -/--*	Selects the programme position on your TV

* If you use the number buttons to select the TV's programme position, press -/-- followed by the number buttons for two-digit numbers.

To operate the TV/DVD button (for SCART connections only)

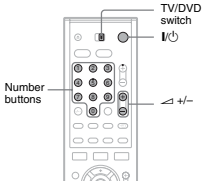
The TV/DVD button switches between the recorder and the last input source selected on the TV. Point your remote at the recorder when using this button. The button works even if the TV/DVD switch is set to DVD.
When you connect the recorder to the TV via the SCART jacks, the input source for the TV is set to the recorder automatically when you start playback. To watch another source, press the TV/DVD button to switch the TV's input source.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

Manufacturer	Code number
Sony	01 (default)
Aiwa	01 (default)
Grundig	11
Hitachi	23, 24, 72
Loewe	06, 45
Nokia	15, 16, 69, 73
Panasonic	17, 49
Philips	06, 07, 08, 23, 45, 72
Saba	12, 13, 36, 43, 74, 75
Samsung	06, 22, 23, 71, 72
Sanyo	25
Sharp	29
Telefunken	12, 13, 36, 43, 74, 75
Thomson	12, 13, 43, 74, 75
Toshiba	38
LG	06
JVC	33

Controlling the volume of your AV amplifier (receiver) with the remote



1 Slide the TV/DVD switch to DVD.

2 Hold down I/⏻, and enter the manufacturer code (see the table below) for your AV amplifier (receiver) using the number buttons.

3 Release I/⏻.
The (volume) +/– buttons control the AV amplifier's volume.
If you want to control the TV's volume, slide the TV/DVD switch to TV.

Hint
If you want to control the TV's volume even when the TV/DVD switch is set to DVD, repeat the steps above and enter the code number 90 (default).

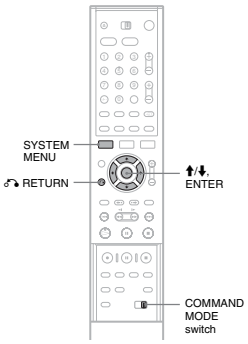
Code numbers of controllable AV amplifiers (receivers)

If more than one code number is listed, try entering them one at a time until you find the one that works with your AV amplifier (receiver).

Manufacturer	Code number
Sony	78, 79, 80, 91
Denon	84, 85, 86
Kenwood	92, 93
Onkyo	81, 82, 83
Pioneer	99
Sansui	87
Technics	97, 98
Yamaha	94, 95, 96

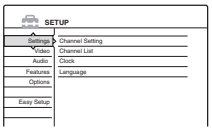
If you have a Sony DVD player or more than one Sony DVD recorder

If the supplied remote interferes with your other Sony DVD recorder or player, set the command mode number for this recorder and the supplied remote to one that differs from the other Sony DVD recorder or player.
The default command mode setting for this recorder and the supplied remote is DVD3.



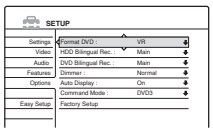
1 Press SYSTEM MENU.
The System Menu appears.

2 Select "SETUP," and press ENTER.

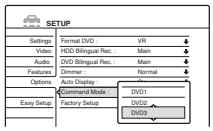


→continued

3 Select "Options," and press ENTER.



4 Select "Command Mode," and press ENTER.



5 Select the Command mode (DVD1, DVD2, or DVD3), and press ENTER.

6 Slide the COMMAND MODE switch on the remote so it matches the mode you selected above.

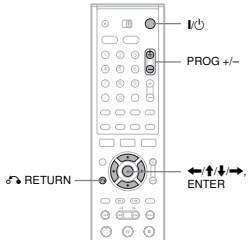
To return to the previous step

Press RETURN.

Step 7: Easy Setup

Follow the steps below to make the minimum number of basic adjustments for using the recorder. If you do not complete Easy Setup, it will appear each time you turn on your recorder. Settings are made in the following order.

OSD Language Setup
↓
Tuner and Channel Setup
↓
Clock Setup
↓
TV Type Setup
↓
Video Connection Setup
↓
Audio Connection Setup
↓
Finished!



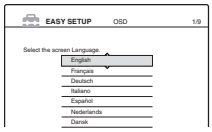
1 Turn on the TV.

2 Press I/⏻.
The recorder turns on.

3 Switch the input selector on your TV so that the signal from the recorder appears on your TV screen.
"Initial settings necessary to operate the DVD recorder will be made. You can change them later using Setup. Before you start, check that you have made all necessary connections." appears.
- If this message does not appear, select "Easy Setup" from "SETUP" in the System Menu to run Easy Setup. For details, see "Settings and Adjustments" (page 83).

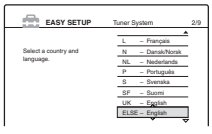
4 Press ENTER.
The Setup Display for selecting the language used in the on-screen display appears.

5 Select a language.

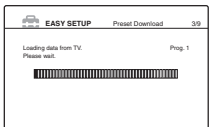


6 Press ENTER.
The Setup Display for selecting your country and language for the tuner system appears. The channel order will be set according to the country or language you select.

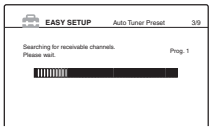
7 Select your country or language.
- If you live in a French speaking country that is not listed on the display, select "ELSE."



8 Press ENTER.
- If you made connection Ⓐ (page 14) and the connected TV complies with SMARTLINK, the Preset Download function automatically starts.

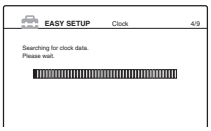


- If the Preset Download function does not work or if you made a connection other than Ⓐ, the Auto Tuner Preset function automatically starts searching for all of the receivable channels and presets them.



To set the channels manually, see page 84.

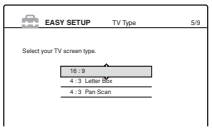
9 After the download or search is complete, the Clock function automatically starts.



Once the clock signal is received, the Setup Display for selecting the aspect ratio of the connected TV appears.
- If the current time or date is not set, the display for setting the clock manually appears. Set the clock manually using ←/↑/↓/→, and press ENTER.

→continued

10 Select the setting that matches your TV type.



"16:9": For wide-screen TVs or standard TVs with a wide screen mode.
"4:3 Letter Box": For standard TVs. Displays "wide screen" pictures with bands on the upper and lower sections of the screen.
"4:3 Pan Scan": For standard TVs. Automatically displays "wide screen" pictures on the entire screen and cuts off the sections that do not fit.

For details, see "TV Type" on page 88.

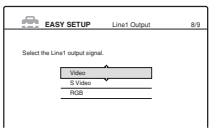
11 Press ENTER.
The Setup Display for the component out jacks appears.

12 Select an option.
Select "On" if you are using the COMPONENT VIDEO OUT jacks. Otherwise, select "Off."

13 Press ENTER.
The Setup Display for the LINE 3/DECODER jack appears.

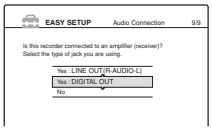
14 Select an option.
Select "Yes" if you will connect a decoder to the LINE 3/DECODER jack. Otherwise, select "No."

15 Press ENTER.
The Setup Display for selecting the type of video signal output from the LINE 1-TV jack appears.



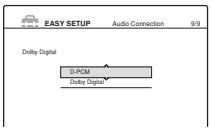
16 Select the type of signal you want to output from the LINE1-TV jack.
"Video": Outputs video signals.
"S Video": Outputs S video signals.
"RGB": Outputs RGB signals.
Note that if you select "On" in step 12, you cannot select "RGB," and that if you select "Yes" in step 14, you cannot select "S Video."
• If you select "S Video" or "RGB," SMARTLINK will be deactivated.

17 Press ENTER.
The Setup Display for selecting the type of jack used to connect to your amplifier (receiver) appears.



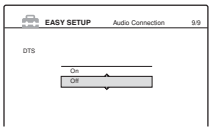
18 Select the type of jack (if any) you are using to connect to an amplifier (receiver), and press ENTER.
If you did not connect an AV amplifier (receiver), select "No," then go to step 22.
If you connected an AV amplifier (receiver) using just an audio cord, select "Yes: LINE OUT (R-AUDIO-L)," then go to step 22.
If you connected an AV amplifier (receiver) using either a digital optical or coaxial cord, select "Yes: DIGITAL OUT."

19 Select the type of Dolby Digital signal you wish to send to your amplifier (receiver).



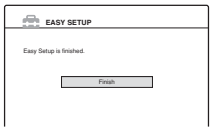
If your AV amplifier (receiver) has a Dolby Digital decoder, select "Dolby Digital." Otherwise, select "D-PCM."

20 Press ENTER.
The Setup Display for the DTS signal appears.



21 Select whether or not you wish to send a DTS signal to your amplifier (receiver), and press ENTER.
If your AV amplifier (receiver) has a DTS decoder, select "On." Otherwise, select "Off."

22 Press ENTER when "Finish" appears.
Easy Setup is finished. All connections and setup operations are complete.



To return to the previous step
Press ↩ RETURN.

Hints
• If your AV amplifier (receiver) has an MPEG audio decoder, set "MPEG" to "MPEG" (page 92).
• If you want to run Easy Setup again, select "Easy Setup" in the Setup Display (page 98).

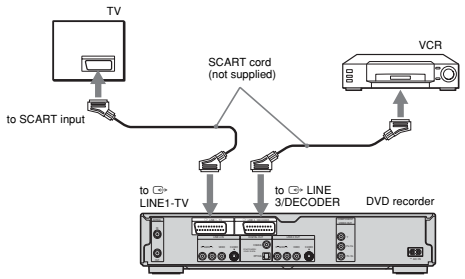
Note
To record TV programmes using the timer, you must set the clock accurately.

Connecting a VCR or Similar Device

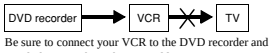
After disconnecting the recorder's mains lead from the mains, connect a VCR or similar recording device to the LINE IN jacks of this recorder.
Use the DV IN jack on the front panel if the equipment has a DV output jack (i.LINK jack) (page 77).
See also the instruction manual supplied with the connected equipment.
To record on this recorder, see "Recording From Connected Equipment Without a Timer" (page 52).

Connecting to the LINE 3 jack

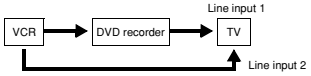
Connect a VCR or similar recording device to the LINE 3/DECODER jack of this recorder.



Notes
• Pictures containing copy protection signals that prohibit any copying cannot be recorded.
• If you pass the recorder signals via the VCR, you may not receive a clear image on your TV screen.



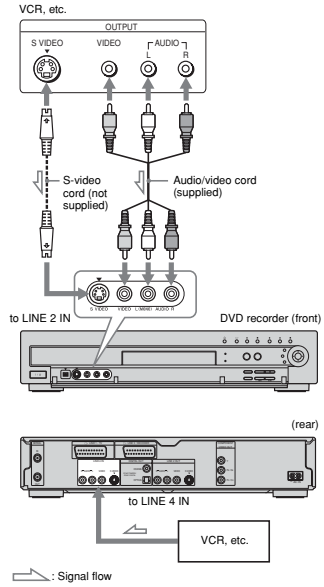
Be sure to connect your VCR to the DVD recorder and your TV in the order shown below. To watch video tapes, watch the tapes through a second line input on your TV.



• The SMARTLINK features are not available for devices connected via the DVD recorder's LINE 3/DECODER jack.
• When you record to a VCR from this DVD recorder, do not switch the input source to TV by pressing the TV/DVD button on the remote.
• If you disconnect the recorder's mains lead, you will not be able to view the signals from the connected VCR.

Connecting to the LINE 2 IN or LINE 4 IN jacks

Connect a VCR or similar recording device to the LINE 2 IN or LINE 4 IN jacks of this recorder. If the equipment has an S-video jack, you can use an S-video cord instead of an audio/video cord.

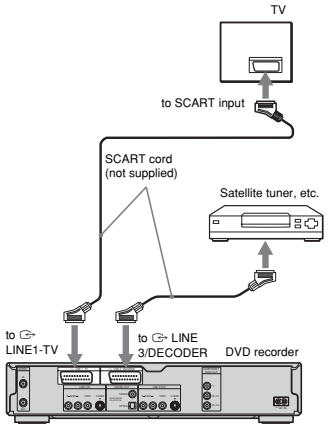


Hint
When the connected equipment outputs only monaural sound, use audio cables that distribute monaural sounds to left/right channels (not supplied).

Notes
• Do not connect the yellow LINE IN (VIDEO) jack when using an S-video cord.
• Do not connect the output jack of this recorder to another equipment's input jack with the other equipment's output jack connected to the input jack of this recorder. Noise (feedback) may result.
• Do not connect more than one type of video cord between the recorder and your TV at the same time.

Connecting to a Satellite or Digital Tuner

Connect a satellite or digital tuner to this recorder using the LINE 3/DECODER jack. Disconnect the recorder's mains lead from the mains when connecting the tuner.
To use the Synchro-Rec function, see below.



If the satellite tuner can output RGB signals
This recorder accepts RGB signals. If the satellite tuner can output RGB signals, connect the TV SCART connector on the satellite tuner to the LINE 3/DECODER jack, and set "Line3 Input" of "Scart Setting" to "Video/RGB" in Video Setup (page 90). Note that this connection and setup disable the SMARTLINK function. If you want to use the SMARTLINK function with a compatible set top box, see the instructions supplied with the set top box.

If you want to use the Synchro Rec function
This connection is necessary to use the Synchronized Recording function. See "Recording From Connected Equipment With a Timer (Synchro Rec)" (page 51).

Set "Line3 Input" of "Scart Setting" in Video Setup (page 90) according to the specifications of your satellite tuner. See your satellite tuner's instructions for more information.
If you are using a B Sky B tuner, be sure to connect the tuner's VCR SCART jack to the LINE 3/DECODER jack. Then set "Line3 Input" of "Scart Setting" according to the specifications of the VCR SCART jack on your satellite tuner.

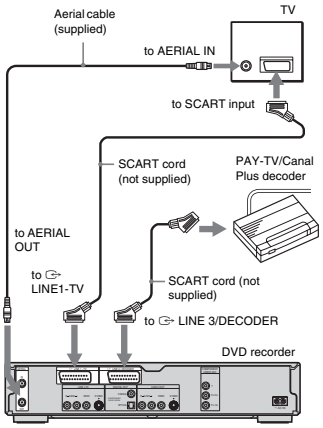
Notes

- Do not set "Line3 Input" of "Scart Setting" in Video Setup to "Decoder."
- Synchronized Recording does not work with some tuners. For details, see the tuner's operating instructions.
- If you disconnect the recorder's mains lead, you will not be able to view the signals from the connected tuner.

Connecting a PAY-TV/Canal Plus Decoder

You can watch or record PAY-TV/Canal Plus programmes if you connect a decoder (not supplied) to the recorder. Disconnect the recorder's mains lead from the mains when connecting the decoder.

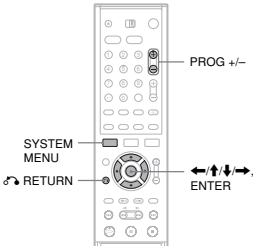
Connecting a decoder



➡continued

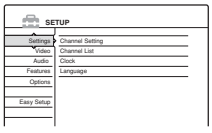
Setting PAY-TV/Canal Plus channels

To watch or record PAY-TV/Canal Plus programmes, set your recorder to receive the channels using the on-screen display.
In order to set the channels correctly, be sure to follow all of the steps below.

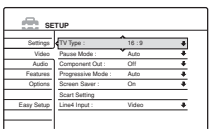


1 Press SYSTEM MENU.
The System Menu appears.

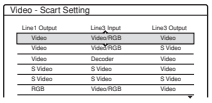
2 Select "SETUP," and press ENTER.



3 Select "Video," and press ENTER.



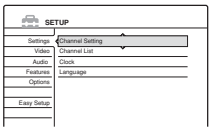
4 Select "Scart Setting," and press ENTER.



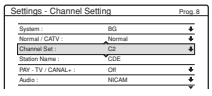
5 Press ↑/↓ to select "Video" or "RGB" for "Line1 Output," "Decoder" for "Line3 Input," and "Video" for "Line3 Output," and press ENTER.
The Video Setup display appears again.

6 Press ↶ RETURN to return the cursor to the left column.

7 Select "Settings," and press ENTER.

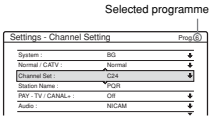


8 Select "Channel Setting," and press ENTER.

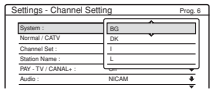

Settings - Channel Setting
Prog. 8
System : BG
Normal / CATV : Normal
Channel Set : C2
Station Name : CDE
PAY - TV / CANAL+ : Off
Audio : NICAM

9 Press PROG +/– to select the desired programme position.

Selected programme position

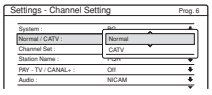

Settings - Channel Setting
Prog. 6
System : BG
Normal / CATV : Normal
Channel Set : C24
Station Name : PQR
PAY - TV / CANAL+ : Off
Audio : NICAM

10 Select "System," and press ENTER.



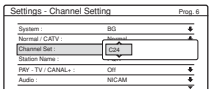
11 Press ↑/↓ to select an available TV system, BG, DK, I, or L, and press ENTER.
To receive broadcasts in France, select "L."

12 Select "Normal/CATV," and press ENTER.



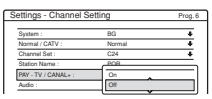
13 Select "Normal," and press ENTER.
To preset CATV (Cable Television) channels, select "CATV."

14 Select "Channel Set," and press ENTER.



15 Select the PAY-TV/Canal Plus channel, and press ENTER.

16 Select "PAY-TV/CANAL+," and press ENTER.



17 Select "On," and press ENTER.

To return to the previous step
Press ↶ RETURN.

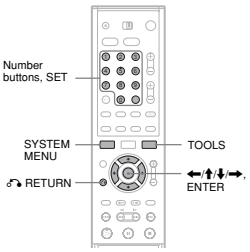
Notes

- When you set "Line3 Input" to "Decoder" in step 5 above, you will not be able to select "L3" because Line 3 will become a dedicated line for the decoder.
- If you disconnect the recorder's mains lead, you will not be able to view the signals from the connected decoder.

Using the On-Screen Menus

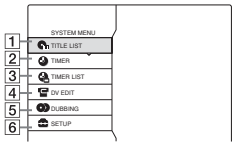
HDD +RW -RWVR -RWVideo +R -R
DVD VCD CD DATA CD

This section introduces the System Menu, TOOLS menu, and sub-menu. By using these displays, you can perform most of the recorder's operations.



System Menu

The System Menu appears when you press SYSTEM MENU, and provides entries to all of the recorder's main functions, such as timer recording and setup.
Select an option by pressing ↑/↓ and ENTER.



1 TITLE LIST (page 33):
Turns on the Title List menu, which shows recorded titles on the disc.

2 TIMER (page 42):
Allows you to set a new timer recording setting.

3 TIMER LIST (page 46):
Turns on the Timer List menu, which allows you to check, change, or cancel timer settings.

4 DV EDIT (page 77):
Activates the DV Edit function, which allows you to record and edit the contents of a DV format tape.

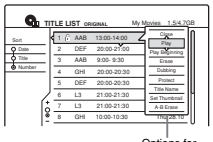
5 DUBBING (page 72):
Dubs titles from the HDD to a DVD and vice versa. Select the dubbing direction before dubbing.

6 SETUP (page 83):
Turns on the Setup Display, which allows you to set up the recorder to suit your preferences.

Sub-menu

The sub-menu appears when you select an item from a list menu (e.g. a title from the Title List menu), and press ENTER. The sub-menu displays options applicable only to the selected item. The displayed options differ depending on the situation and disc type.
Select an option by pressing ↑/↓ and ENTER.

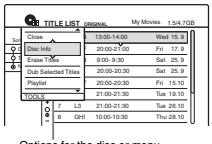
Example: The Title List menu



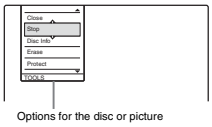
TOOLS

The TOOLS menu appears when you press TOOLS, and displays options applicable to the entire disc (e.g. disc protection), recorder (e.g. audio settings during recording), or multiple items on a list menu (e.g. erasing multiple titles). The displayed options differ depending on the situation and disc type.
Select the option by pressing ↑/↓ and ENTER.

Example 1: When you press TOOLS while the Title List menu is turned on.



Example 2: When you press TOOLS while a DVD-RW (VR mode) is playing.



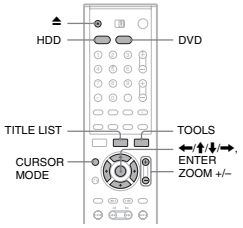
To return to the previous display

Press ↩ RETURN.

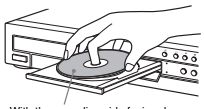
Using the Title List

HDD +RW -RWVR -RWVideo +R -R

The title of programmes recorded on a disc is displayed in the Title List.



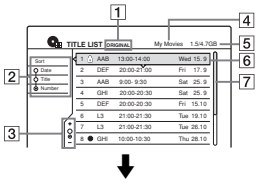
1 Press HDD or DVD.
If you select DVD, press ⏏ (open/close) and place a DVD on the disc tray. Press ⏏ again to close the disc tray.



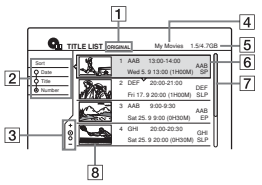
Wait until "LOAD" disappears from the front panel display.

2 Press TITLE LIST.
To show the list in greater detail (zoom), press ZOOM+.

Standard Title List (Example: DVD-RW in VR mode)



"Zoomed" Title List



1 Disc type:
Displays a media type, HDD or DVD. Also displays the title type (Original or Playlist) for DVD-RWs (VR mode).

2 Sort buttons:
Sorts the title order (see below).

3 Zooming indicator:
Shows the current zoom status.

4 Disc name (DVD only) (page 36)

5 Disc space (remainder/total)

6 Title information:
Displays the title number, title name, and recording date.
● (red): Indicates that the title is currently being recorded.
: Indicates that the title is currently being dubbed.
: Indicates the protected title.
"NEW" (or N): Indicates that the title is newly recorded (not played back) (HDD only).
: Indicates that the Update function is set (HDD only) (page 42).

7 Scroll bar:
Appears when all of the titles do not fit on the list. To view the hidden titles, press ↑/↓.

8 Title's thumbnail picture

To scroll the list display by page (Page mode)

Press CURSOR MODE while the list display is turned on. The display enters Page mode. Each time you press ↑/↓, the entire Title List changes to the next/previous page of titles.
To return to the Cursor mode, press CURSOR MODE again.

About the Title List for DVD-RWs (VR mode)

You can switch the Title List to show Original or Playlist.
While the Title List menu is turned on, press TOOLS and select either "Original" or "Playlist," and press ENTER. "PLAYLIST" appears on the front panel display when "Playlist" is selected. For details, see "Edit options for DVD-RWs (VR mode)" (page 64).

To change the title order (Sort)

Press ← while the Title List menu is turned on to move the cursor to the Sort column. Press ↑/↓ to select the item, and press ENTER.

Order	Sorted
New (HDD only)	in order of when the titles were recorded. The title that is recorded most recently and not played back is listed at the top.
Date	in order of when the titles were recorded. The title that is recorded most recently is listed at the top.
Title	in alphabetical order.
Number	in order of recorded title number.

To change a title thumbnail picture (Thumbnail) (HDD/DVD-RW in VR mode only)

You can select a favourite scene for the thumbnail picture shown in the Title List menu.

1 Press TITLE LIST while a disc is in the recorder and press ZOOM+.

2 Select a title whose thumbnail picture you want to change, and press ENTER.

3 Select "Set Thumbnail" from the sub-menu, and press ENTER.
The selected title starts to play in the background.

4 While watching the playback picture, press ▷, ❚❚, or ◀◀/▶▶ to select the scene you want to set for a thumbnail picture, and press ENTER.
The scene is set for the title's thumbnail picture.

To turn off the Title List

Press TITLE LIST.

Hint
After recording, the first scene of the recording (the title) is automatically set as the thumbnail picture.

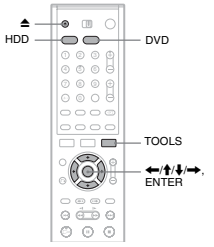
Notes

- The Title List may not appear for DVDs created on other DVD recorders.
- The letters that cannot be displayed are replaced with "*."
- Title thumbnail pictures are displayed only on this recorder.
- It may take a few seconds for the thumbnail pictures to be displayed.
- After editing, the title thumbnail picture may change to the first scene of the recording (title).
- After dubbing, the title thumbnail picture set on the source recording is cancelled.

Using the "Disc Info" Screen (disc settings)

HDD +RW -RWVR -RWVideo +R -R

With the Disc Information display, you can check the disc type and remaining disc space. Also, you can perform operations such as formatting and finalizing (page 36).



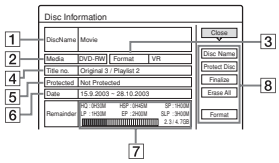
1 Press HDD or DVD.
If you select a DVD, press ⏏ (open/close) and place a DVD on the disc tray. Press ⏏ again to close the disc tray.

Wait until "LOAD" disappears from the front panel display.

2 Press TOOLS.
The TOOLS menu appears.

3 Select "Disc Info," and press ENTER.
Items in the display differ depending on the disc type or recording format.

Example: DVD-RW (VR mode)



1 "Disc Name" (DVD only)

2 "Media": Disc type

3 "Format": Recording format type (DVD-RW only)

4 "Title no.": Total number of titles

5 "Protected": Indicates whether protection is set (DVD-RW in VR mode only)

6 "Date": Dates of when the oldest and the most recent titles were recorded (DVD only)

7 "Continuous Rem. Time"/"Remainder" (approximate)
- The longest continuous recording time in each of the recording modes
- Disc space bar
- Remaining disc space/total disc space

8 Disc setting buttons (page 36)
"Disc Name"
"Protect Disc"
"Finalize"/"Unfinalize"
"Erase All"
"Format"
Available settings differ depending on the disc type.

Hint

For DVD+RWs and DVD-RWs (Video mode), you can check free space and title location on the disc using the Disc Map display (page 67).

Note

On this model, 1 GB (read "gigabyte") is equivalent to 1 billion bytes. The larger the number, the larger the disc space.

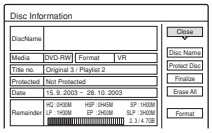
Labelling, protecting, or formatting a disc

HDD +RW -RWVR -RWVideo +R -R

You can execute options effective for the entire disc using the Disc Information display.

1 Press TOOLS while the disc is in the recorder.
The TOOLS menu appears.

2 Select "Disc Info," and press ENTER.
Example: When the inserted disc is a DVD-RW (VR mode).



3 Select an option, and press ENTER.
"Disc Name" (DVD only): Labels a DVD. Enter the disc name in the "Input Disc Name" display (page 40).
"Protect Disc" (DVD-RW in VR mode only): Protects all titles on the disc. To cancel the protection, select "Don't Protect."
"Erase All" (HDD/DVD+RW/DVD-RW only): Erases all titles on the disc (except the protected titles).
"Format" (HDD/DVD+RW/DVD-RW only): Erases all contents of the disc to make a blank disc. For DVD-RWs, select a recording format (VR or Video) according to your needs.

Hints
- You can set protection for individual titles (page 65).
- By reformatting, you can change the recording format on DVD-RWs, or record again on DVD-RWs (Video mode) that have been finalized.

Note

You can enter up to 64 characters for a DVD's disc name. The disc name may not appear when the disc is played on other DVD equipment.

Finalizing a DVD (preparing a disc for playback on other equipment)

+RW -RWVR -RWVideo +R -R

Finalizing is necessary when you play discs recorded with this recorder on other DVD equipment.
When you finalize a DVD+RW, DVD-RW (Video mode), DVD+R, or DVD-R, a DVD menu will be automatically created, which can be displayed on other DVD equipment.
Before finalizing, check the differences between the disc types in the table below.

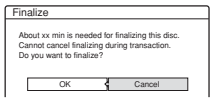
Differences between the disc types

+RW	Discs are automatically finalized when removed from the recorder. However, you may need to finalize the disc for certain DVD equipment, or if the recording time is short. You can edit or record on the disc even after finalizing.
-RWVR	Finalizing is unnecessary when playing a disc on VR format compatible equipment. Even if your other DVD equipment is VR format compatible, you may need to finalize the disc, especially if the recording time is short. You can edit or record on the disc even after finalizing.
-RWVideo	Finalizing is necessary when playing on any equipment other than this recorder. After finalizing, you cannot edit or record on the disc. If you want to record on it again, reformat the disc (page 36). However, all recorded contents will be erased.
+R -R	Finalizing is necessary when playing on any equipment other than this recorder. After finalizing, you cannot edit or record on the disc.

1 Press TOOLS while the disc is in the recorder.
The TOOLS menu appears.

2 Select "Disc Info," and press ENTER.
The Disc Information display appears.

3 Select "Finalize," and press ENTER.
The display shows the approximate time required for finalizing and asks for confirmation.



4 Select "OK," and press ENTER.
The recorder starts finalizing the disc.

To unfinalize a DVD-RW (VR mode)

If you cannot record or edit on a DVD-RW (VR mode) that has been finalized with other DVD equipment (a message appears), unfinalize the disc by selecting "Unfinalize" in step 3 above.

Hint

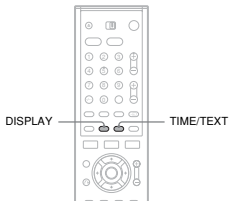
You can check whether the disc has been finalized or not. If you cannot select "Finalize" in step 3 above, the disc has already been finalized.

Notes
- Depending on the condition of the disc, recording, or the DVD equipment, discs may not play even if the discs are finalized.
- The recorder may not be able to finalize the disc if it was recorded on another recorder.

Checking the Play Information and Playing Time

HDD +RW -RWVR -RWVideo +R -R
DVD VCD CD DATA CD

You can check the playing time and remaining time of the current title, chapter, or track. Also, you can check the disc name recorded on the DVD/CD.

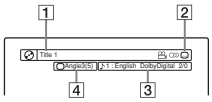


Press DISPLAY repeatedly.
Each time you press the button, the display changes as follows:

Title/track information (Display 1)
↓
Play mode/time information (Display 2)
↓
(Display off)

The displays differ depending on the disc type or playing status.

◆Display 1
Example: When playing a DVD VIDEO



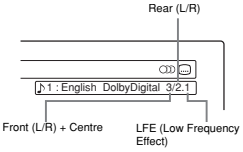
1 Title number/name
(Track number for CDs/VIDEO CDs without PBC, scene number for VIDEO CDs with PBC, track number/name for DATA CDs)

2 Available functions for DVD VIDEOs (angle/ audio/ subtitle, etc.)

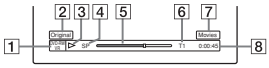
3 The current selected function or audio setting (appears only temporarily)

4 The current selected angle

Example: Dolby Digital 5.1 ch



◆Display 2
Example: When playing a DVD-RW (VR mode)



1 Disc type*2/format (page 8)

2 Title type (Original or Playlist) (page 64)

3 Play mode

4 Recording mode (page 41)

5 Playing status bar*3

6 Title number (chapter number*1) (page 61)
(Track number for CDs/VIDEO CDs without PBC, scene number for VIDEO CDs with PBC, track number (album number*1) for DATA CDs)

7 CD text (album name) appears when text is recorded on a CD.

8 Playing time (remaining time*1)

*1 Displayed when you press TIME/TEXT repeatedly.
*2 Displays Super VCDs as "SVCD," DATA CDs as "CD."
*3 Does not appear with VIDEO CDs, and DATA CDs.

Hints
- If "DTS" is set to "Off" in Audio Setup, the DTS track selection option will not appear on the screen even if the disc contains DTS tracks (page 92).
- When "Auto Display" is set to "On" (default) in Options Setup (page 97), playback information automatically appears when the recorder is turned on, etc.

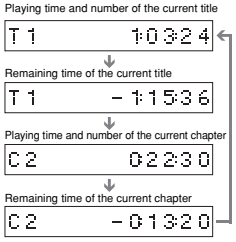
Notes
- The recorder can only display the first level of a CD's text, such as the disc name.
- The letters or symbols that cannot be displayed are replaced with "*."

Checking the playing/remaining time

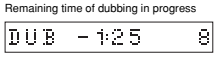
You can view the playing or time information displayed on the TV screen and the front panel display.

Press TIME/TEXT repeatedly.
The displays differ depending on the disc type or playing status.

◆Front panel display
Example: When playing a DVD


Playing time and number of the current title
T 1 1:03:24
Remaining time of the current title
T 1 -1:15:36
Playing time and number of the current chapter
C 2 02:30
Remaining time of the current chapter
C 2 -01:20

Example: When dubbing a DVD



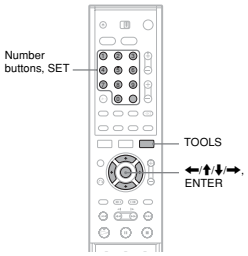
Example: When playing a CD

Track playing time and the current track/index number
↓
Remaining time of the current track
↓
Playing time of the disc
↓
Remaining time of the disc
↓
CD text (when available)

Notes
- The recorder can only display the first level of a CD's text, such as the disc name.
- The letters or symbols that cannot be displayed are replaced with "*."
- Playing time of MP3 audio tracks may not be displayed correctly.

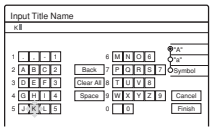
How to Enter Characters

You can label a DVD, title, or program by entering characters. You can enter up to 64 characters for a title or disc name, but the actual number of characters displayed in the menus such as the Title List will vary. When the display for entering characters appears, follow the steps below.



1 Press ←/↑/↓/→ to move the cursor to the right of the screen and select "A" (upper-case), "a" (lower-case), or "Symbol," and press ENTER.
The characters of the selected type are displayed.

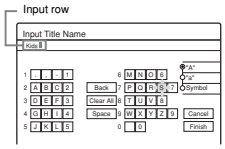
2 Press ←/↑/↓/→ to select the character you want to enter, and press ENTER.
The selected character appears at the top of the display.
Example: Input Title Name



The type of characters will change according to the language you select in Easy Setup. Some languages allow you to enter an accent mark.

To enter a letter with an accent mark, select an accent followed by the letter.
Example: Select " ` " and then "a" to enter "à."
To insert a space, select "Space."

3 Repeat steps 1 and 2 to enter the remaining characters.



To erase a character, move the cursor to the right of the character at the input row. Select "Back" and press ENTER.
To insert a character, move the cursor to the right of the point where you want to insert the character. Select the character and press ENTER.
To erase all of the characters, select "Clear All" and press ENTER.

4 Select "Finish," and press ENTER.
To cancel the setting, select "Cancel."

To use the number buttons

You can also use the number buttons to enter characters.

1 In step 2 above, press a number button repeatedly to select a character.
Example:
Press the number 3 button once to enter "D."
Press the number 3 button three times to enter "F."

2 Press SET and select the next character.

3 Select "Finish" and press ENTER.

ZWEITON (German stereo) system

When a stereo or bilingual ZWEITON based programme is received, "STEREO" or "BILINGUAL" appears in the front panel display.

NICAM system

When a stereo or bilingual NICAM based programme is received, "NICAM" appears in the front panel display.
To record a NICAM programme, be sure to set "Audio" of "Channel Setting" in Settings Setup to "NICAM" (default). If the sound is not clear when listening to NICAM broadcasts, set "Audio" to "Standard" (see "Channel Setting" on page 84).

Hint
You can select the audio (main or sub) while recording bilingual programmes using the (audio) button. This does not affect the recorded sound.

Unrecordable pictures

Pictures with copy protection cannot be recorded on this recorder.
When the recorder receives a copy guard signal, the recorder continues to record but only a blank, grey coloured screen will be recorded.

Copy control signals	Recordable discs
Copy-Free	HDD +RW -RWVR -RWVideo +R -R
Copy-Once	HDD -RWVR (Ver.1.1 with CPRM*)
Copy-Never	None (a blank screen is recorded)

* The recorded disc can be played only on CPRM compatible equipment (page 8).

Recording

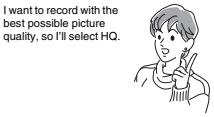
Before Recording

Before you start recording…
- This recorder can record on various discs. Select the disc type according to your needs (page 8).
- Check that the disc has enough available space for the recording (page 35). For HDD, DVD+RWs, and DVD-RWs, you can free up disc space by erasing titles (page 65).
- Adjust the recording picture quality and picture size if necessary (page 49).

Hint
Timer recordings will be made regardless whether or not the recorder is turned on. You can turn off the recorder without affecting the recording even after recording starts.

Recording mode

Like the SP or LP recording mode of VCRs, this recorder has six different recording modes. Select a recording mode according to the time and picture quality you need. For example, if picture quality is your top priority, select the High Quality mode (HQ). If recording time is your priority, Super Long Play mode (SLP) can be a possible choice. Note that the recording time in the following table is an approximate guide.
Press REC MODE repeatedly to switch the recording modes.



Recording mode	Recording time (hour)		
	HDD		DVD
	(HX1000)	(HX900)	
HQ (High quality)	53	33	1
HSP ↑	81	51	1.5
SP (Standard mode)	107	67	2
LP ↓	164	103	3
EP ↓	217	137	4
SLP (Long duration)	325	204	6

"HQ+" recording mode

"HQ+" records pictures in higher quality than HQ on the HDD. Set "HQ Setting" in Features Setup to "HQ+" (page 96). Maximum recording time is 34 hours for RDR-HX1000 or 21 hours for RDR-HX900. "HQ" appears in the display.

Note
Situations below may cause slight inaccuracies with the recording time.
– Recording a programme with poor reception, or a programme or video source of low picture quality
– Recording on a disc that has already been edited
– Recording only a still picture or just sound

Recording stereo and bilingual programmes

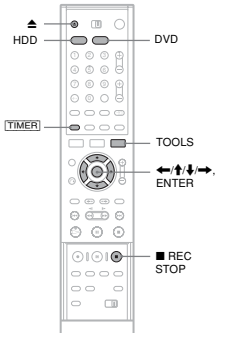
The recorder automatically receives and records stereo and bilingual programmes based on the ZWEITON system or the NICAM system.
The HDD and a DVD-RW (VR mode) can record both main and sub sounds. You can switch between main and sub when playing the disc. For the HDD, you can select the sound track before recording. Select "Main," "Sub," or "Main+Sub" in "HDD Bilingual Rec." of Options Setup (page 97).
A DVD+RW, DVD-RW (Video mode), DVD+R, or DVD-R can record only one sound track (main or sub) at a time. Select the sound track using the Setup Display before recording starts. Set "DVD Bilingual Rec." to "Main" (default) or "Sub" in Options Setup (page 97).

Timer Recording (Standard/ VIDEO Plus+)

HDD +RW -RWVR -RWVideo +R -R

You can set the timer for a total of eight programmes, up to one month in advance. There are two methods to set the timer: the standard method and VIDEO Plus+ method.
- Standard: Set the date, time, and programme position of the programme manually.
- VIDEO Plus+: Enter the PlusCode number designated for each TV programme (page 44).

Setting the timer manually (Standard)

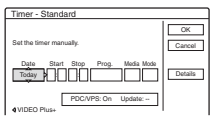


1 Press HDD or DVD.
If you select DVD, press ⏏ (open/close) and place a DVD on the disc tray. Press ⏏ again to close the disc tray.

With the recording side facing down

Wait until "LOAD" disappears from the front panel display.
Unused DVDs are formatted automatically.

2 Press TIMER.



- If the Timer programming (VIDEO Plus+) menu appears, press ← to switch the display to "Standard."

3 Select an item using ←/→ and adjust using ↑/↓.
"Date": Sets the date.
The item changes as follows:
Today ↔ Tomorrow ↔ …… ↔ Thu 28.10 (1 month later) ↔ Sun (every Sunday) ↔ …… ↔ Sat (every Saturday) ↔ Mon-Fri (Monday to Friday) ↔ Mon-Sat (Monday to Saturday) ↔ Sun-Sat (Sunday to Saturday) ↔ Today

"Start": Sets the start time.
"Stop": Sets the stop time.
"Prog.": Selects the programme position or input source.
"Media": Selects the media, HDD or DVD.
"Mode": Selects the recording mode (page 41).
- If you want to change the setting for the PDC/VPS or Update functions, select "Details" and press ENTER. Select an item using ←/→ and set using ↑/↓.

"PDC/VPS": Sets the PDC/VPS function. See "About the PDC/VPS function" below.
"Update" (HDD only): Automatically records over a previously recorded programme that is set to be recorded daily or weekly.
To return to the Timer programming menu, select "Previous" and ENTER.
- If you make a mistake, select the item and change the setting.

4 Select "OK," and press ENTER.
The Timer List menu (page 46) appears. The TIMER REC indicator lights up on the front panel and the recorder is ready to start recording.
Unlike a VCR, there is no need to turn off the recorder before the timer recording starts.

To stop recording during timer recording

Open the remote's cover and press ■ REC STOP. Note that it may take a few seconds for the recorder to stop recording.

About the PDC/VPS function

PDC/VPS signals are transmitted with TV programmes in some broadcast systems. These signals ensure that timer recordings are made regardless of any broadcast delays, early starts, or broadcast interruptions.

◆To use the PDC/VPS function
Set "PDC/VPS" to "On" in step 3 above.
When you turn on this function, the recorder starts scanning the channel before the timer recording starts. If you are watching TV when scanning starts, a message will appear on the TV screen. If you want to watch TV, switch to your TV's tuner or turn off the PDC/VPS channel scan function.

◆To turn off the PDC/VPS channel scan
Press TOOLS and select "PDC/VPS Scan Off." To ensure that the PDC/VPS function works properly, turn off the recorder before the timer recording starts. This will automatically turn on the PDC/VPS channel scan function while the recorder remains off.

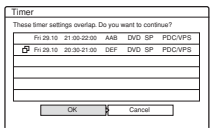
Rec Mode Adjust

If there is not enough available disc space for the recording, the recorder automatically adjusts the recording mode to enable the entire programme to be recorded. This function is normally set to "On."

To cancel this function, press TOOLS while the Timer List is displayed. Select "Rec Mode Adjust" and press ENTER. Select "Off" and press ENTER.

If the timer settings overlap

Overlapped timer settings are shown as follows.


Timer
These timer settings overlap. Do you want to continue?
Fri 29.10 21:00-22:00 AAB DVD SP PDC/VPS
Fri 29.10 20:30-21:00 DEF DVD SP PDC/VPS
OK
Cancel

To store the setting as shown, select "OK." The programme that starts first has priority and the second programme starts recording only after the first programme has finished.
To cancel the overlapped setting, select "Cancel."

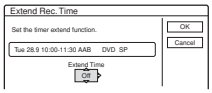
To confirm, change, or cancel timer recording

See "Checking/Changing/Cancelling Timer Settings (Timer List)" (page 46).

To extend the recording duration time while recording

1 Press TOOLS during recording.
The TOOLS menu appears.

2 Select "Extend Rec" and press ENTER.



3 Press ↑/↓ to select the duration time.
You can set the duration in increments of 10 minutes, for a maximum of 60 minutes.

4 Select "OK" and press ENTER.

One Touch Timer

If you use the SMARTLINK connection, you can easily display the timer programming menu. When the TV is turned on or in standby mode, press TIMER. The recorder automatically turns on and the TV's input is switched to the recorder. The TV programming menu appears.

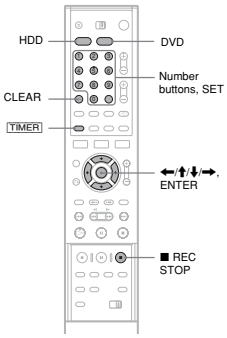
Hint
You can play the recorded programme by selecting the programme title in the Title List menu.

Notes

- If "The disc is full or nearly full" appears on the screen, change the disc, or make available space for the recording (HDD/DVD+RW/DVD-RW only) (page 66).
- Check that the clock is correctly set before setting the timer recording. If not, the timer recording cannot be made.
  To record a satellite programme, turn on the satellite tuner and select the satellite programme you want to record. Leave the satellite tuner turned on until the recorder finishes recording. If you connect equipment with a timer function, you can use the Synchro Rec function (page 51).
- Even if the timer is set for the same daily or weekly programme, the timer recording cannot be made if it overlaps with a programme that has priority. "⧉" will appear next to the overlapped setting in the Timer List. Check the priority order of the settings.
- Even if the timer is set, timer recordings cannot be made while recording a programme that has priority.
- The Rec Mode Adjust function only works with a timer recording and the PDC/VPS function set to off. It does not function with Quick Timer or Synchro Rec.
- The beginning of some recordings may not be made when using the PDC/VPS function.
- You cannot extend the recording duration time when "PDC/VPS" is set to "On."

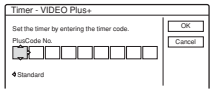
Recording TV programmes using the VIDEO Plus+ system

The VIDEO Plus+ system is a feature that simplifies setting the timer. Just enter the PlusCode number listed in the TV programme guide. The date, time, and channel of that programme are set automatically.
Check that the channels are correctly set in "Channel Setting" in Settings Setup (page 84).



1 **Press HDD or DVD.**
If you select DVD, insert a recordable DVD.

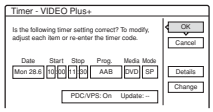
2 **Press TIMER.**



- If the Timer programming (Standard) menu appears, press ← to switch the display to "VIDEO Plus+."

3 **Press the number buttons to enter the PlusCode number, and press SET.**
- If you make a mistake, press CLEAR and re-enter the correct number.

4 **Select "OK," and press ENTER.**
The date, start and stop times, programme position, recording mode, etc. setting (page 43) appear.


Timer - VIDEO Plus+
Is the following timer setting correct? To modify, adjust each item or re-enter the timer code.
Date Start Stop Prog. Media Mode
Mon 28.8 10 30 17 52 AAB DVD SP
OK
Cancel
Details
Change
PDC/VPS: On Update: --

- If you want to change the setting, press ←/→ to select the item and press ↑/↓ to change the setting. For the PDC/VPS or Update functions, select "Details" and change the settings (page 43).

To re-enter the PlusCode number, select "Change."

5 **Select "OK," and press ENTER.**
The TIMER REC indicator lights up on the front panel, and the recorder is ready to start recording.

To stop recording during timer recording

Open the remote's cover and press ■ REC STOP. Note that it may take a few seconds for the recorder to stop recording.

If the timer settings overlap

See page 44.

To extend the recording duration time while recording

See page 44.

To confirm, change, or cancel timer recording

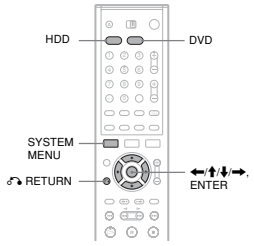
See "Checking/Changing/Cancelling Timer Settings (Timer List)" (page 46).

Hint
The Rec Mode Adjust function also works with this timer method (page 43).

Checking/Changing/Cancelling Timer Settings (Timer List)

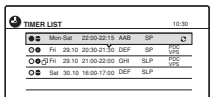
HDD +RW -RW Video -RW Video +R -R

You can check, change, or cancel timer settings using the Timer List menu.



1 **Press SYSTEM MENU.**
The System Menu appears.

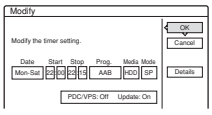
2 **Select "TIMER LIST," and press ENTER.**


TIMER LIST 10:30
Mon-Sat 22:00-22:15 AAB SP
Fri 29.10 20:30-21:30 DEF SP PDC VPS
Fri 29.10 21:00-22:00 GHI SLP PDC VPS
Sat 30.10 16:00-17:00 DEF SLP

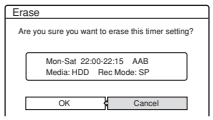
Timer information displays the recording date, time, recording mode, etc.
⧉: Indicates that the setting is overlapped by another setting.
● (green): Indicates the setting can be recorded
● (red): Indicates the setting currently being recorded.
○ (grey): Indicates that the setting cannot be recorded in the selected recording mode.
⛁: Indicates the setting being recorded on the HDD.
⦿: Indicates the setting being recorded on a DVD.
🔁: Indicates the setting that the Update function is set for.

3 **Select the timer setting you want to check/change/cancel, and press ENTER.**
The sub-menu appears.

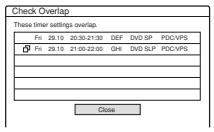
4 **Select one of the options, and press ENTER.**
"Modify": Changes the timer setting.
Select an item using ←/→ and adjust using ↑/↓. For the PDC/VPS or Update functions, select "Details" and change the settings (page 43). Select "OK" and press ENTER.



"Erase": Erases the timer setting. Select "OK" and press ENTER.



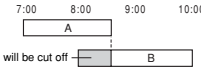
"Check Overlap": Checks for overlapped settings.


Check Overlap
These timer settings overlap.
Fri 29.10 20:30-21:30 DEF DVD SP PDC/VPS
Fri 29.10 21:00-22:00 GHI DVD SLP PDC/VPS
Close

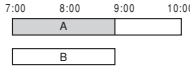
Select "Close" to return to the Timer List.
To change or cancel the setting, repeat steps 3 and 4 above.

When the timer settings overlap

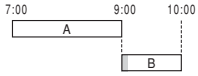
The programme that starts first has priority and the second programme starts recording only after the first programme has finished.



◆When the recordings start at the same time
The programme that is set last has priority. In this example, timer setting B is set after A, so the first part of timer setting A will not be recorded.



◆When the end time of one recording and the start time of another are the same
After finishing the previous recording, the other recording may be delayed.



To turn off the Timer List

Press ↩ RETURN.

Hint
While recording, you cannot modify the timer setting for the current recording, but you can extend the recording duration of the recording time (page 44).

Notes

- When "PDC/VPS" is set to "On" for one or more timer recordings, the start times may change in the event of a broadcast delay or early start.
- Even if the timer is set, timer recordings cannot be made while recording a programme that has priority.
- Even if the timer is set for the same daily or weekly programme, the timer recording cannot be made if it overlaps with a programme that has priority. "⧉" will appear next to the overlapped setting in the Timer List. Check the priority order of the settings.

Automatically erasing old titles (Auto Title Erase)

HDD

If there is not enough space for a timer recording, the recorder automatically erases old titles recorded on the HDD. The oldest, played title is erased. The protected titles are not erased.

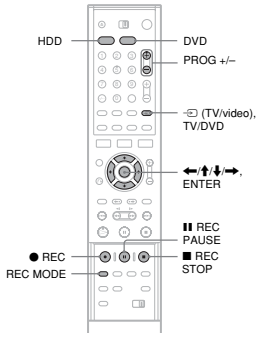
1 **Display the Timer List menu and press TOOLS.**

2 **Select "Auto Title Erase," and press ENTER.**

3 **Select "On," and press ENTER.**
The default setting is "Off."

Recording Without the Timer

HDD +RW -RWVR -RWVideo +R -R



1 Press HDD or DVD to select a media.
When you selected DVD, insert a recordable DVD.

2 Press PROG +/– to select the programme position or input source you want to record.

3 Press REC MODE repeatedly to select the recording mode.
Each time you press the button, the display changes on the TV screen as follows:

HQ → HSP → SP → LP → EP → SLP

For more details about the recording mode, see page 41.

4 Press ● REC.
Recording starts.
Recording continues until you stop the recording or the disc is full.

To stop recording
Press ■ REC STOP located beneath the remote control cover. Note that it may take a few seconds for recording to stop.

To pause recording
Press ❚❚ REC PAUSE located beneath the remote control cover. To restart recording, press the button again.

To watch another TV programme while recording
If your TV is connected to the LINE 1-TV jack, set your TV to the TV input using the TV/DVD button and select the programme you want to watch. If your TV is connected to the LINE 2 OUT or COMPONENT VIDEO OUT jacks, set the TV to TV input using the (TV/video) button (page 20).

TV Direct Rec
If you use the SMARTLINK connection, you can easily record what you are watching on your TV. When the TV is turned on or in standby mode, press ● REC. The recorder automatically turns on and starts recording what you are watching on the TV. "TV" appears in the front panel display. You cannot turn off the TV or change the programme position during TV Direct Rec. To turn off the function, set "TV Direct Rec" to "Off" in Features Setup (page 93).

About the Teletext function
Some broadcasts systems ensure a Teletext service* in which the complete programmes and their data (title, date, channel, recording start time etc.) are stored day by day. When recording a programme, the recorder automatically takes the programme name from the Teletext pages and stores it as the title name. For details, see "TV Guide Page" (page 93).
Note that the Teletext information will not appear on your TV screen. To view the Teletext information on your TV screen, press TV/DVD on the remote to switch the input source to your TV.
* not available in some areas

Hint
If you do not want to watch TV while recording, you can turn off the TV. When using a decoder, make sure to leave it on.

Notes
- After pressing ● REC, it may take a short while to start recording.
- You cannot change the recording mode while recording or during recording pause.
- If there is a power failure, the programme you are recording may be erased.
- You cannot watch a PAY-TV/Canal Plus programme while recording another PAY-TV/Canal Plus programme.
- To use the TV Direct Rec function, you must first set the recorder's clock correctly.

Using the Quick Timer function

You can set the recorder to record in 30-minute increments.

Press ● REC repeatedly to set the duration.
Each press advances the time in 30-minute increments. The maximum duration is six hours.

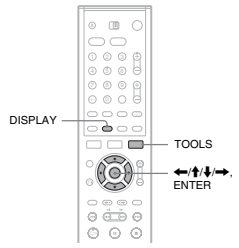
0:30 → 1:00 ⋯→ 5:30 → 6:00 → (normal recording)

The time counter decreases minute by minute to 0:00, then the recorder stops recording (power does not turn off). Even if you turn off the recorder during recording, the recorder continues to record until the time counter runs out.
Note that the Quick Timer function does not work if "TV Direct Rec" is set to "On" in Features Setup (page 93).

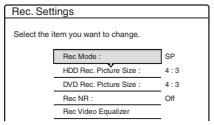
To cancel the Quick Timer
Press ● REC repeatedly until the counter appears in the front panel display. The recorder returns to normal recording mode.

Adjusting the recording picture quality and size

You can adjust the recording picture quality and picture size.



1 Before recording starts, press TOOLS and select "Rec Settings." Then press ENTER.


Rec. Settings
Select the item you want to change.
Rec Mode : SP
HDD Rec. Picture Size : 4 : 3
DVD Rec. Picture Size : 4 : 3
Rec NR : Off
Rec Video Equalizer

2 Select the item you want to adjust, and press ENTER.
The adjustment display appears.

Example: Rec NR

"Rec Mode": Selects the recording mode for the desired recording time and picture quality. For more information, see "Recording mode" (page 41).

"HDD Rec. Picture Size"/"DVD Rec. Picture Size": Sets the picture size of the programme to be recorded.
- 4:3 (default): Sets the picture size to 4:3.
- 16:9: Sets the picture size to 16:9 (wide mode).
- Auto (HDD only): Automatically selects the actual picture size.

"DVD Rec. Picture Size" works with DVD-Rs and DVD-RWs (Video mode) when the recording mode is set to HQ, HSP, or SP. For all other recording modes, the screen size is fixed at "4:3."
For DVD-RWs (VR mode), the actual picture size is recorded regardless of the setting. For example, if a 16:9 size picture is received, the disc records the picture as 16:9 even if "DVD Rec. Picture Size" is set to "4:3."
For DVD+RWs/DVD+Rs, the screen size is fixed at "4:3."

"Rec NR" (noise reduction): Reduces noise contained in the video signal.

"Rec Video Equalizer": Adjusts the picture in greater detail.
Press ↑/↓ to select the item you want to adjust, then press ENTER.
- Contrast: Changes the contrast.
- Brightness: Changes the overall brightness.
- Colour: Makes the colours deeper or lighter.

3 Adjust the setting using ←/↑/↓/→, and press ENTER.
The default setting is underlined.
"Rec NR": (weak) Off 1 ~ 3 (strong)
"Rec Video Equalizer":
- Contrast: (weak) –3 ~ 0 ~ 3 (strong)
- Brightness: (dark) –3 ~ 0 ~ 3 (bright)
- Colour: (light) –3 ~ 0 ~ 3 (deep)

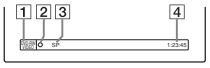
Repeat steps 2 and 3 to adjust any other items.

Notes
- If one programme contains two picture sizes, the selected size is recorded. However, if the 16:9 signal cannot be recorded as 16:9, it is recorded as 4:3.
- When playing a 16:9 size picture recorded as 4:3, The image is fixed to 4:3 letter box regardless of the setting in "TV Type" of Video Setup (page 88).
- Remnants of images may appear on your screen when using "Rec NR."
- "Rec Video Equalizer" does not affect the input of the DV IN jack and does not work with RGB signals.

Checking the disc status while recording

You can check the recording information such as recording time or disc type.

Press DISPLAY twice during recording.
The recording information appears.



1 Disc type/format
2 Recording status
3 Recording mode
4 Recording time

Press DISPLAY to turn off the display.

Creating chapters in a title

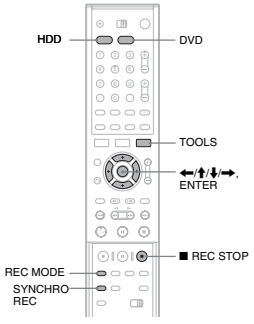
The recorder will automatically divide a recording (a title) into chapters by inserting chapter marks at 6 or 15-minute intervals during recording. Select the interval, "6Min" (default) or "15Min" in "Auto Chapter" of Features Setup (page 93).

Hint
You can create chapters manually when playing the HDD or DVD-RWs (VR mode). For details, see page 68.

Recording From Connected Equipment With a Timer (Synchro Rec)

HDD +RW -RWVR -RWVideo +R -R

You can set the recorder to automatically record programmes from connected equipment that has a timer function (such as a satellite tuner). Connect the equipment to the LINE 3/DECODER jack of the recorder (page 28).
When the connected equipment turns on, the recorder starts recording a programme from the LINE 3/DECODER jack.



1 Before recording, select HDD or DVD. Set "Synchro Rec" in Features Setup to "Record to HDD" or "Record to DVD" (page 96).
If you select DVD, insert a recordable DVD.

2 Press INPUT SELECT repeatedly to select "L3."

3 Select the line input audio when recording a bilingual programme on the HDD or DVD-RWs (VR mode).
Press TOOLS to display the TOOLS menu.
Select "Line Audio Input" and press ENTER.
Select "Bilingual" and press ENTER.
For details about bilingual recording, see page 41.

4 Press REC MODE repeatedly to select the recording mode, HQ, HSP, SP, LP, EP, or SLP.

5 Set the timer on the connected equipment to the time of the programme you want to record, and turn it off.

6 Press SYNCHRO REC.
The SYNCHRO REC indicator lights up on the front panel. The recorder is ready to start Synchro-Recording.
The recorder automatically starts recording when it receives an input signal from the connected equipment. The recorder stops recording when the connected equipment turns off.

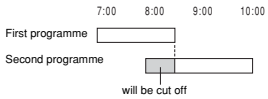
To stop recording
Press ■ REC STOP or SYNCHRO REC.

To cancel Synchro Rec
Press SYNCHRO REC. The SYNCHRO REC indicator on the recorder turns off.

Notes
- The recorder starts recording only after detecting the video signal from the connected equipment. The beginning of the programme may not be recorded regardless of whether or not the recorder's power is on or off.
- During Synchro-Recording, other operations such as normal recording cannot be done.
- To use the connected equipment while the recorder is standing by for Synchro-Recording, cancel Synchro-Recording by pressing SYNCHRO REC. Be sure to turn off the connected equipment and press SYNCHRO REC to reset Synchro-Recording before the timer recording starts.
- The Synchro Rec function does not work when "Line3 Input" of Video Setup is set to "Decoder" (page 90).
- The Synchro Rec function does not work with some tuners. For details, see the tuner's operating instructions.
- While the recorder is standing by for Synchro-Recording, the Auto Clock Set function (page 87) does not work.
- To use the Synchro Rec function, you must first set the recorder's clock correctly.

If the timer settings of a Synchro-Recording and another timer recording overlap

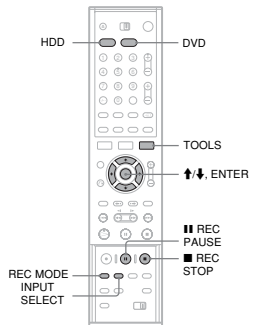
Regardless of whether or not the programme is a Synchro Rec programme, the programme that starts first has priority and the second programme starts recording only after the first programme has finished.



Recording From Connected Equipment Without a Timer

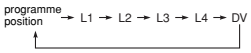
HDD +RW -RWVR -RWVideo +R -R

You can record from a connected VCR or similar device. To connect a VCR or similar device, see "Connecting a VCR or Similar Device" (page 26). Use the DV IN jack on the front panel if the equipment has a DV output jack (i.LINK jack).



1 Press HDD or DVD.
If you select DVD, insert a recordable DVD.

2 Press INPUT SELECT to select an input source according to the connection you made.
The front panel display changes as follows:



3 Select the line input audio when recording a bilingual programme on the HDD or DVD-RWs (VR mode).
Press TOOLS to display the TOOLS menu.
Select "Line Audio Input" and press ENTER.
Select "Bilingual" and press ENTER.
For details about bilingual recording, see page 41.

4 Press REC MODE repeatedly to select the recording mode, HQ, HSP, SP, LP, EP, or SLP.

5 Press ▮▮ REC PAUSE to set this recorder to record pause.

6 Insert the source tape into the connected equipment and set to playback pause.

7 At the same time, press ▮▮ REC PAUSE on this recorder and the pause or play button on the connected equipment.
Recording starts.
To stop recording, press ■ REC STOP on this recorder.

If you connect a digital video camera with a DV IN jack

See "DV Dubbing (DV → HDD/DVD)" (page 77) for an explanation of how to record from the DV IN jack.

Hint

You can adjust the settings for the recording picture before recording. See "Adjusting the recording picture quality and size" (page 49).

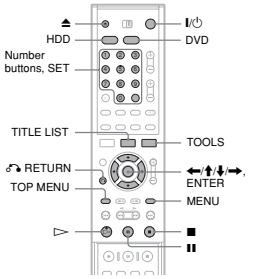
Notes

- When recording a video game image, the screen may not be clear.
- Any programme that contains a Copy-Never copy guard signal cannot be recorded. The recorder continues to record, but a blank screen will be recorded.

Playback

Playing

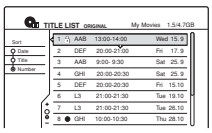
HDD +RW -RWVR -RWVideo +R -R
DVD VCD CD DATA CD



1 Press HDD or DVD.
- If you select DVD, press ⏏ (open/close) and place a DVD or CD on the disc tray. Then press the button again to close the disc tray.
- If you insert a DVD VIDEO, VIDEO CD, CD, or DATA CD, press ▷. Playback starts.

2 Press TITLE LIST.
For details about the Title List, see "Using the Title List" (page 33).

Example: DVD-RW (VR mode)



3 Select the title, and press ENTER.
The sub-menu appears.

4 Select "Play," and press ENTER.
Playback starts from the selected title.

To use the DVD's Menu

When you play a DVD VIDEO, or a finalized DVD+RW, DVD-RW (Video mode), DVD+R, or DVD-R, you can display the disc's menu by pressing TOP MENU or MENU.

To play VIDEO CDs with PBC functions

PBC (Playback Control) allows you to play VIDEO CDs interactively using the menu on your TV screen.
When you start playing a VIDEO CD with PBC functions, the menu appears.
Select an item using the number buttons and press ENTER. Then, follow the instructions in the menu (press ▷ when "Press SELECT" appears).
The PBC function of Super VCDs does not work with this recorder. Super VCDs are played in continuous play mode only.

To stop playback

Press ■.

To resume playback from the point where you stopped (Resume Play)

When you press ▷ again after you stop playback, the recorder resumes playback from the point where you pressed ■.
To start from the beginning, press TOOLS, select "Play Beginning" and press ENTER. Playback starts from the beginning of the title/track/scene.

The point where you stopped playing is cleared when:
– you open the disc tray (except for HDD).
– you play another title (except for HDD).
– you switch the Title List menu to Original or Playlist (DVD-RW in VR mode only).
– you edit the title after stopping playback.
– you change the settings on the recorder.
– you turn off the recorder (VIDEO CD/CD/DATA CD only).
– you make a recording (except for HDD/DVD-RWs in VR mode).

To play restricted DVDs (Parental Control)

If you play a restricted DVD, the message "Do you want temporarily change parental control to *?" appears on your TV screen.

1 Select "OK" and press ENTER.
The display for entering your password appears.

2 Enter your four-digit password using the number buttons.

3 Press ENTER to select "OK."
The recorder starts playback.

To register or change the password, see "Parental Control (DVD VIDEO only)" (page 94).

To lock the disc tray (Child Lock)

You can lock the disc tray to prevent children from ejecting the disc.
When the recorder is in standby mode, press RETURN, ENTER, and then I/⏻ on the remote.
The recorder turns on and "LOCKED" appears in the front panel display. The ⏏ (open/close) button does not work while the Child Lock is set.

To unlock the disc tray, press RETURN, ENTER, and then I/⏻ on the remote again when the recorder is in standby mode.

One Touch Play

If you use the SMARTLINK connection, you can easily start playing.
When the TV is turned on or in standby mode, press ▷. The recorder automatically turns on and the TV's input is switched to the recorder.
Playback starts automatically.

One Touch Menu

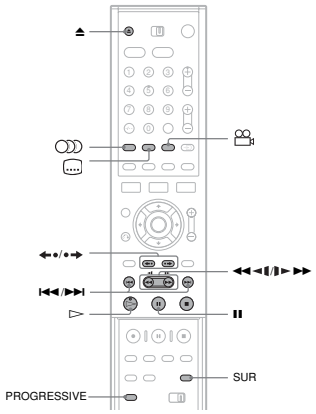
If you use the SMARTLINK connection, you can easily display the Title List.
When the TV is turned on or in standby mode, press TITLE LIST. The recorder automatically turns on and the TV's input is switched to the recorder. The Title List menu appears.

Hints

- You can also use the ▷ button in step 3 (page 54) to start playback.
- Even if a timer recording starts during playback, neither the recording nor playback will stop (page 60).
- Even if you select "Factory Setup" in Options Setup (page 97), the Child Lock remains set.

→continued

Playback options



Buttons	Operations	Discs
⏏ (open/close)	Stops play and opens the disc tray.	All discs
(audio)	Selects one of the audio tracks recorded on the disc when pressed repeatedly. DVD : Selects the language. HDD -RWVR : Selects the main or sub sound. VCD CD DATA CD : Selects stereo or monaural audio tracks.	HDD -RWVR DVD VCD CD DATA CD
(subtitle)	Selects a subtitle language when pressed repeatedly.	DVD
(angle)	Selects an angle when pressed repeatedly. If various angles (multi-angles) for a scene are recorded on the disc, " " appears in the front panel display.	DVD

Buttons	Operations	Discs
SUR (surround)	Selects one of the TVS effects when pressed repeatedly. TVS* (TV Virtual Surround) lets you enjoy virtual surround sound effects created from the front left and right speakers. The selected setting is displayed in the front panel display for a few seconds. "TVS OFF": No surround effect "TVS DYNAMIC": Creates one set of virtual rear speakers. "TVS WIDE": Creates five sets of virtual rear speakers. "TVS NIGHT": Creates five sets of virtual rear speakers. Effective at low volume. "TVS STANDARD": Creates three sets of virtual rear speakers. Effective when you use two separate front speakers.	DVD * TVS was developed by Sony to produce home surround sound with just a stereo TV. This works with multichannel Dolby Digital and MPEG soundtracks.
PROGRESSIVE	Switches the type of video output signal to interlace or progressive format (page 16).	HDD +RW -RWVR -RWVideo +R -R DVD VCD
⏮/● (instant replay/instant advance)	Replays the scene/briefly fast forwards the scene.	HDD +RW -RWVR -RWVideo +R -R DVD
⏮ (previous)/ ⏭ (next)	Goes to the beginning of the previous/next title/ chapter/scene/track.	All discs
◀◀ ◀‖/‖▶ ▶▶ (fast reverse/fast forward)	Fast reverses/fast forwards the disc when pressed during playback. Search speed changes as follows: fast reverse: FR1 ← FR2 ← FR3* ← ← ← fast forward: → FF1 → → FF2 → → → FF3* When you press and hold the button, fast forward/fast reverse continues at the selected speed until you release the button.	All discs * FR3 and FF3 are only available for the HDD and DVDs.
◀◀ ◀‖/‖▶ ▶▶ (slow, freeze frame)	Plays in slow motion when pressed for more than one second in pause mode. Plays one frame at a time when pressed briefly in pause mode.	HDD +RW -RWVR -RWVideo +R -R DVD VCD * * Playback direction only
‖ (pause)	Pauses playback.	All discs

To resume normal playback, press ▷.

→continued

Notes

- To enjoy the TVS function, set "Digital Output" to "On" and "Dolby Digital" to "D-PCM" in Audio Setup.
- When the playback signal does not contain a signal for the rear speakers, the surround effects will be difficult to hear.
- When you select one of the surround modes, turn off the surround settings of the connected TV or amplifier (receiver).
- Make sure that your listening position is between and at an equal distance from your speakers, and that the speakers are located in similar surroundings.
- The TVS function cannot be used with titles recorded on this recorder. Angles and subtitles also cannot be changed.
- When you use the DIGITAL OUT (COAXIAL) jack to listen to MPEG audio signals and set "MPEG" to "MPEG" in Audio Setup, no sound will come from your speakers if you select one of the TVS modes.

Notes on playing DTS sound tracks on a CD

- When playing DTS-encoded CDs, excessive noise will be heard from the analogue stereo jacks. To avoid possible damage to the audio system, the consumer should take proper precautions when the analogue stereo jacks of the recorder are connected to an amplification system. To enjoy DTS Digital Surround™ playback, an external 5.1-channel decoder system must be connected to the digital jack of the recorder.
- Set the sound to "Stereo" using the (audio) button when you play DTS sound tracks on a CD (page 56).

Notes on playing DVDs with a DTS sound track

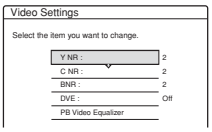
DTS audio signals are output only through the DIGITAL OUT (COAXIAL or OPTICAL) jack.
When you play a DVD with DTS sound tracks, set "DTS" to "On" in Audio Setup (page 92).

Adjusting the picture quality

HDD +RW -RWVR -RWVideo +R -R DVD VCD

1 Press TOOLS during playback.
The TOOLS menu appears.

2 Select "Video Settings," and press ENTER.



3 Select an item, and press ENTER.
The adjustment display appears.
"Y NR" (luminance noise reduction): Reduces noise contained in the luminance element of the video signal.
"C NR" (chroma noise reduction): Reduces noise contained in the colour element of the video signal.
"BNR" (block noise reduction): Reduces "block noise" or mosaic like patterns in the picture.
"DVE" (digital video enhancer): Sharpens the outlines of the images.
"PB Video Equalizer" (Playback video equalizer): Adjusts the picture in greater detail.
Select an item and press ENTER.
- Contrast: changes the contrast.
- Brightness: changes the overall brightness.
- Colour: makes the colours deeper or lighter.
- Hue: changes the colour balance.

4 Press ←/→ to adjust the setting, and press ENTER.
The default settings are underlined.
"Y NR": (weak) Off 1 2 3 (strong)
"C NR": (weak) Off 1 2 3 (strong)
"BNR": (weak) Off 1 2 3 (strong)
"DVE"*: (weak) Off 1 2 3 (strong)
"PB Video Equalizer":
- Contrast: (weak) –3 ~ 0 ~ 3 (strong)
- Brightness: (dark) –3 ~ 0 ~ 3 (bright)
- Colour: (light) –3 ~ 0 ~ 3 (deep)
- Hue: (red) –3 ~ 0 ~ 3 (green)

Repeat steps 3 and 4 to adjust any other items.
* "1" softens the outlines of the images. "2" enhances the outlines and "3" enhances them more than "2."

Notes

- If the outlines of the images on your screen become blurred, set "BNR" to "Off."
- Depending on the disc or the scene being played, the above BNR, Y NR, or C NR effects may be hard to discern. And, these functions may not work with some screen sizes.
- When playing a title recorded in SLP recording mode, the BNR setting may have little effect.
- When using the DVE function, noise found in the title may become more apparent. In this case, it is recommended that you use the BNR function with the DVE function. If the condition still does not improve, set the DVE level to "1" or "Off."

Adjusting the sound quality

HDD +RW -RWVR -RWVideo +R -R DVD VCD CD

1 Press TOOLS during playback.
The TOOLS menu appears.

2 Select "Audio Settings," and press ENTER.

3 Select an item, and press ENTER.
"Surround (TVS)" (DVD VIDEO only): Selects one of the surround modes. For more information, see "Playback options" (page 56).

"Audio Filter" (all discs): Selects the digital filter to reduce noise above 22.05 kHz (Fs* is 44.1 kHz), 24 kHz (Fs is 48 kHz), or 48 kHz (Fs is above 96 kHz).
- Sharp (default): Provides a wide frequency range and spatial feeling.
- Slow: Provides smooth and warm sound.

* Sampling frequency of audio source. This function only adjusts the output signals from the LINE 1 – TV, LINE 3/DECODER, or LINE 2 OUT (AUDIO L/R).

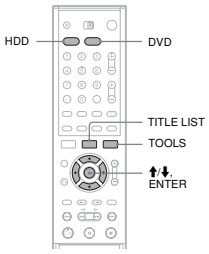
4 Press ←/↑/↓/→ to select the option, and press ENTER.

Note

There may be little effect by changing the Audio Filter depending on the disc or playback environment.

Chasing Playback/ Simultaneous Rec and Play

You can view the beginning of a programme while it is being recorded. You can also play a title or previously recorded programme while recording.



Playing from the beginning of the programme you are recording (Chasing Playback)

HDD -RWVR

"Chasing Playback" allows you to view the recorded part of a programme while the recording is being made. You do not need to wait until the recording finishes.

1 Press TOOLS while recording.
The TOOLS menu appears.

2 Select "Chasing Playback," and press ENTER.
Playback starts from the beginning of the programme you are recording.
When you fast forward to the point that you are recording, Chasing Playback returns to normal playback.

Notes

- For DVD-RWs (VR mode), this function does not work when recording:
  – on a 1x-speed DVD-RW.
  – in the HQ or HSP recording mode.
- The DVD's picture on your TV screen freezes for a few seconds when you fast forward/fast reverse or instant replay/advance the recording.

Playing a previous recording while making another (Simultaneous Rec and Play)

HDD +RW -RWVR -RWVideo +R -R DVD VCD CD DATA CD

"Simultaneous Rec and Play" allows you to view a previously recorded programme while recording programmes. Playback continues even if a timer recording starts. Use this function as follows:

- While recording to the HDD:
  Play another title on the HDD.
  Play a previously recorded programme on a DVD by pressing DVD.
- While recording to a DVD:
  Play a previously recorded programme on the HDD by pressing HDD.
- While recording to a DVD-RW (VR mode)*1:
  Play another title on the same DVD-RW (VR mode) disc.*2

*1 Simultaneous Rec and Play function does not work when you record:
– on a 1x-speed DVD-RW.
– in the HQ or HSP recording mode.

*2 Picture noise may appear depending upon the condition of the recording, or when playing a title recorded in the HQ or HSP recording mode.

You can also play a DVD VIDEO, VIDEO CD, Super VCD, CD, or DATA CD while recording on the HDD.

Example: Play another title on the HDD while recording to the HDD.

1 While recording, press TITLE LIST to display the HDD Title List.

2 Select the title you want to play, and press ENTER.

3 Select "Play" from the sub-menu, and press ENTER.
Playback starts from the selected title.

Example: Play a DVD while recording to the HDD.

1 While recording, press DVD and insert the DVD into the recorder.

2 Press TITLE LIST to display the DVD Title List.

3 Select the title you want to play, and press ENTER.

4 Select "Play" from the sub-menu, and press ENTER.
Playback starts from the selected title.

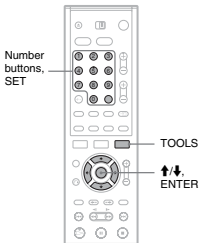
Notes

- The DVD's playback picture on your TV screen freezes for a few seconds when you fast forward/fast reverse or instant replay/advance during Simultaneous Rec and Play.
- You cannot play a DVD recorded in NTSC colour system while recording on the HDD.

Searching for a Title/ Chapter/Track, etc.

HDD +RW -RWVR -RWVideo +R -R DVD VCD CD DATA CD

You can search a disc by title, chapter, scene or track. As titles and tracks are assigned individual numbers, select the title or track by entering its number. You can also search for a scene using the time code.



1 Press TOOLS during playback.
The TOOLS menu appears.

2 Select a search method, and press ENTER.
"Title Search" (for DVDs)
"Chapter Search" (for HDD/DVDs)
"Track Search" (for CDs/DATA CDs)
"Search" (for VIDEO CDs)
"Album Search" (for DATA CDs)
"Time Search" (for HDD/DVDs): Searches for a starting point by entering the time code.

The display for entering the number appears.
Example: Title Search

The number in parentheses indicates the total number of titles, tracks, etc.

→continued

3 Press the number buttons to select the number of the title, chapter, track, time code, etc., you want.
For example: Time Search
To find a scene at 2 hours, 10 minutes, and 20 seconds, enter "21020."
If you make a mistake, press CLEAR to cancel the number, then select another number.

4 Press SET.
The recorder starts playback from the selected number.

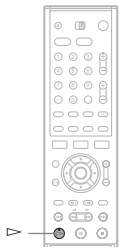
Note

"Title Search" is not applicable to the HDD.

Playing MP3 Audio Tracks

DATA CD

You can play MP3 audio tracks on DATA CDs (CD-ROMs/CD-Rs/CD-RWs).



1 Insert a DATA CD on the disc tray.

2 Press ▷.
Playback starts from the first MP3 audio tracks on the disc. Note that the playback order may be different from the edited order. See "Playback order of MP3 audio tracks" below.

About MP3 audio tracks

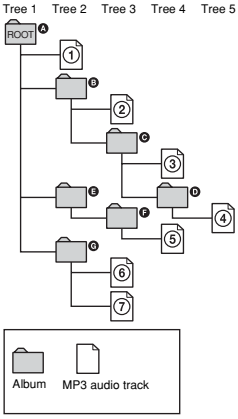
MP3 is audio compression technology that satisfies certain ISO/MPEG regulations.
You can play back DATA CDs (CD-ROMs/CD-Rs/CD-RWs) recorded in MP3 (MPEG1 Audio Layer 3) format. However, the discs must be recorded according to ISO9660 Level 1, Level 2 or Joliet format for the recorder to recognize the tracks. You can also play discs recorded in Multi Session.
See the instructions supplied with the CD-R/CD-RW drives and the recording software (not supplied) for details on the recording format.

Note on Multi Session discs

If MP3 audio tracks are recorded in the first session, the recorder will also play MP3 audio tracks in other sessions. If audio tracks in Music CD format are recorded in the first session, only the first session will be played back.

Playback order of MP3 audio tracks

Albums containing MP3 audio tracks play in the following order.
Ⓐ → Ⓑ → Ⓒ → Ⓓ → Ⓕ → Ⓖ. Albums that do not contain tracks (such as album Ⓔ) are skipped.



When you insert a DATA CD and press ▷, the numbered tracks are played sequentially, from ① through ⑦. Any sub-albums/tracks contained within a currently selected album take priority over the next album in the same tree. (Example: Ⓒ contains Ⓓ so ④ is played before ⑤.)

Hints

- You can view the disc information while playing MP3 audio tracks (page 39).
- If you add numbers (01, 02, 03, etc.) to the front of the track names when you store the tracks in a disc, the tracks will be played in that order.
- Since a disc with many trees takes longer to start playback, it is recommended that you create albums with no more than two trees.

Notes

- Depending on the software you use to create the DATA CD, the playback order may differ from the above illustration.
- Proceeding to the next or another album may take some time.
- The recorder may not be able to play some DATA CDs created in the Packet Write format.
- The recorder will play any data with the extension ".MP3," even if they are not in MP3 format. Playing this data may generate a loud noise which could damage your speaker system.
- The recorder does not conform to audio tracks in MP3PRO format.
- The playback order above may not be applicable if there are more than a total of 999 albums and tracks in the DATA CD.
- The recorder can recognize up to 499 albums (the recorder will count just albums, including albums that do not contain MP3 audio tracks). The recorder will not play any albums beyond the first 499 albums. Of the first 499 albums, the recorder will play no more than a combined total of 999 albums and tracks.
- The recorder can play MP3 audio tracks recorded in the following sampling frequencies: 32 kHz, 44.1 kHz, 48 kHz.
- Only the letters in the alphabet and numbers can be used for album or track names. Anything else is displayed as "*."
- ID3 tags cannot be displayed.

Before Editing

This recorder offers various edit options for various disc types. Before you edit, check the disc type in the front panel display, and select the option available for your disc (page 8).

Note

You may lose the edited contents if you remove the disc or a timer recording starts while editing.

Edit options for the HDD and DVD+RWs/DVD-RWs (Video mode)/ DVD+Rs/DVD-Rs

HDD +RW -RW Video +R -R

You can perform simple edits. Since Video mode titles are actual recordings on the disc, you cannot undo any edits you make. The edit functions available for Video mode titles are:
– Setting protection against erasure (page 65).
– Labelling a title (page 65).
– Erasing a title (page 65).
– Erasing multiple titles (page 66).
– Erasing a section of a title (A-B Erase) (HDD and DVD+RWs only) (page 66).
– Erasing titles to open up disc space (Disc Map) (DVD+RWs and DVD-RWs (Video mode) only) (page 67).

Notes

- Once the DVD is finalized, you cannot edit or record on the disc (except for DVD+RWs and DVD-RWs (VR mode)).
- You cannot create a Playlist (see below).
- If a message appears and indicates that the disc's control information is full, erase unnecessary titles.

Edit options for DVD-RWs (VR mode)

-RW VR

You can enjoy advanced edit functions. First you have two options for a DVD-RW (VR mode): editing either the original recording (called the "original"), or the playback information created from the original (called a "Playlist"). Since each is different in nature and offers different merits, read the following and select the one that better suits your needs.

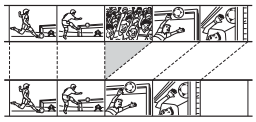
To edit original titles

Edits made to the original titles are final. If you plan to retain an unaltered original recording, create and edit a Playlist (see below). The edit functions available for original titles are:
– Labelling a title (page 65).
– Setting protection against erasure (page 65).
– Erasing a title (page 65).
– Erasing multiple titles (page 66).
– Erasing a section of a title (A-B Erase) (page 66).

To create and edit Playlist titles

A Playlist is a group of Playlist titles created from the original title for editing purposes. When you create a Playlist, only the control information necessary for playback, such as the playback order, is stored on the disc. Since the original titles are left unaltered, Playlist titles can be re-edited.

Example: You have recorded the final few matches of a football tournament on a DVD-RW (VR mode). You want to create a digest with the goal scenes and other highlights, but you also want to keep the original recording.



In this case, you can compile highlight scenes as a Playlist title. You can even rearrange the scene order within the Playlist title ("Creating and Editing a Playlist" on page 68).

"Protect": Protects the title. Select "On" when the Protection display appears. "🔒" appears next to the protected title. To cancel the protection, select "Off."
"Title Name": Allows you to enter or re-enter a title name (page 40).
"Set Thumbnail": Changes the title's thumbnail picture that appears in the Title List (page 33).
"A-B Erase": Erases a section of the title (see below).

Hints

- You can erase multiple titles at one time (page 66), or erase all of the titles on the disc at once (page 36).
- You can label or re-label DVDs (page 36).

Note

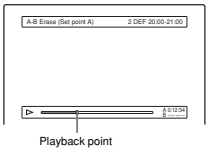
You cannot protect Playlist titles.

Erasing a section of a title (A-B Erase)

HDD +RW -RW VR

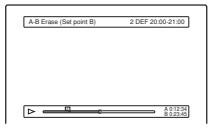
You can select a section (scene) in a title and erase it. Note that erasing scenes in a title cannot be undone.

1 After step 2 of "Editing a Title," select "A-B Erase" and press ENTER.
The display for setting point A appears.



- When the title is protected, the display asks for confirmation. To continue, select "Change," and when the protection display appears, select "Off."

2 Select point A by pressing ◄◄/►►, and press ENTER.
The display for setting point B appears.



3 Select point B by pressing ◄◄/►►, and press ENTER.
The display asks for confirmation. To reset either point A or B, select "Change A" or "Change B," and go to step 2 or 3.

4 Select "OK," and press ENTER.
The scene is erased, and the display asks whether to erase another scene. To continue, select "Yes," and repeat from step 2. To finish, select "No."

Hint

A chapter mark is inserted after the scene was erased. The chapter mark divides the title into separate chapters on either side of the mark.

Notes

- Images or sound may be momentarily interrupted at the point where you erase a section of a title.
- Sections shorter than five seconds may not be erased.
- For DVD+RWs, the erased section may be slightly different from the points you selected.

Erasing multiple titles (Erase Titles)

HDD +RW -RW VR -RW Video +R -R

You can select and erase more than one title at one time using the TOOLS menu.

1 Press TITLE LIST to turn on the Title List menu, and press TOOLS.
The TOOLS menu appears.

2 Select "Erase Titles," and press ENTER.
The display for selecting titles to be erased appears.

The advanced edit functions available for Playlist titles are:
– Labelling a title (page 65).
– Erasing a title (page 65).
– Erasing multiple titles (page 66).
– Erasing a section of a title (A-B Erase) (page 66).
– Rearranging the title order (page 70).
– Dividing a title into multiple titles (page 70).
– Combining multiple titles into one title (page 71).

Hint

You can display the disc's Playlist titles in the Title List (Playlist), or the original titles in the Title List (Original). To switch the two Title Lists, press TOOLS while a Title List is displayed, and select "Original" or "Playlist."

Notes

- The Playlist title calls up data from the original titles for playback. When an original title is used for a Playlist title, the original title cannot be erased.
- You cannot protect Playlist titles.
- If a message appears and indicates that the disc's control information is full, erase unnecessary titles.

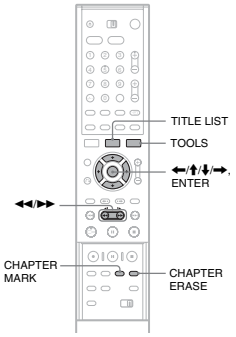
Editing a Title

HDD +RW -RW VR -RW Video +R -R

This section explains the basic edit functions. Note that editing is irreversible. To edit a DVD-RW (VR mode) without changing the original recordings, create a Playlist title (page 68).

Note

When editing a DVD+R, DVD-R, or DVD-RW (Video mode), finish all editing before finalizing the disc. You cannot edit a finalized disc.

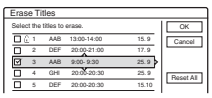


1 Press TITLE LIST.
When editing a DVD-RW in VR mode, press TOOLS and select "Original" or "Playlist" from the TOOLS menu to switch the Title Lists, if necessary.

2 Select a title, and press ENTER.
The sub-menu appears.

3 Select an option, and press ENTER.
You can make the following edits to the title. "Erase": Erases the selected title. Select "OK" when asked for confirmation. When the title is protected, the display asks for confirmation. To erase, select "Change," and when the Protection display appears, select "Off."

3 Select a title, and press ENTER.
A check mark appears in the check box next to the selected title. To clear the check mark, press ENTER again. To clear all of check marks, select "Reset All."



- When the title is protected, the display asks for confirmation. To continue, select "Change," and when the protection display appears, select "Off." To cancel, select "Close."

4 Repeat step 3 to select all of the titles you want to erase.

5 When you finish selecting titles, select "OK," and press ENTER.
The list of the titles to be erased appears for confirmation. To change the selection, select "Change," and repeat from step 3.

6 Select "OK" and press ENTER.
The titles are erased.

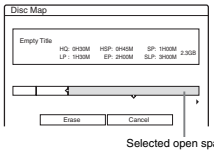
Erasing titles to open up disc space (Disc Map)

+RW -RW Video

When recording on a DVD+RW or DVD-RW (Video mode), the recorder searches for the largest open space and records there. Before you start, check the disc status by using Disc Map, and erase titles to create a space large enough for the recording.

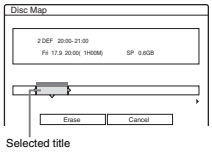
1 Insert a disc and press TITLE LIST.

2 Press TOOLS and select "Disc Map," and press ENTER.
The Disc Map appears. To check the open space, select the space by pressing ←/→.



- When ◄ or ► appears on either side of the screen, you can scroll sideways by pressing ←/→.

3 Select a title by pressing ←/→, and press ENTER.
The display for selecting titles to be erased appears. To cancel the selection, press ENTER again.



- When the title is protected, the display asks for confirmation. To continue, select "Change," and when the protection display appears, select "Off." To cancel, select "Close."

4 Repeat step 3 when erasing more titles.

5 Select "Erase," and press ENTER.
The display asks for confirmation. To change the selection, select "Change."

6 Select "OK," and press ENTER.
The selected titles are erased, freeing up disc space.

Creating chapters manually

HDD -RWVR

You can manually insert a chapter mark at any point you like during playback or recording.

Press CHAPTER MARK at the point where you want to divide the title into chapters.
Each time you press the button, “Marking...” appears on the screen and the scenes to the left and right of the mark become separate chapters.

To erase chapter marks

You can combine two chapters by erasing the chapter mark during playback.
Press I◀◀ /▶▶I to search for a chapter number, and while displaying the chapter containing the chapter mark you want to erase, press CHAPTER ERASE.
The current chapter combines with the previous chapter.

Notes

- If a message appears and indicates that no more chapter marks can be added, you may not be able to record or edit.
- When dubbing, any chapter marks you enter will be erased.

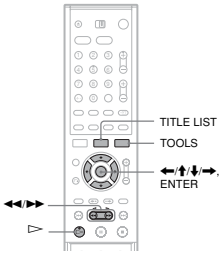
Creating and Editing a Playlist

-RWVR

Playlist edit allows you to edit or re-edit without changing the actual recordings. A Playlist title can contain up to 50 scenes.
For details, see “Edit options for DVD-RWs (VR mode)” (page 64).

Note

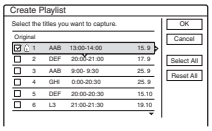
Once you create a Playlist title from original titles, you will be unable to erase or edit the original titles.



1 Press TITLE LIST to turn on the Title List menu, and press TOOLS.
The TOOLS menu appears.

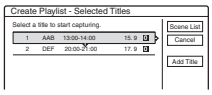
2 Select “Create Playlist,” and press ENTER.
The display for selecting titles appears.

3 Select the title you want to include in the Playlist title, and press ENTER.
A check mark appears in the check box next to the selected title. To clear the check mark, press ENTER again. To select all of the titles, select “Select All.”



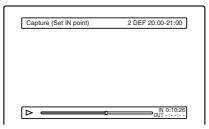
4 Repeat step 3 to add more titles.
To go to the next page of titles, press ↓. To clear all of the check marks, select “Reset All.”

5 Select “OK,” and press ENTER.
The list of selected titles appears. To add another title, select “Add Title.”

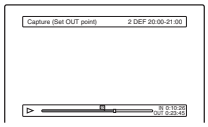


6 Select one of the titles, and press ENTER.
The sub-menu appears.
“Capture”: Adds a section of the title to the Playlist title as one scene.
“Capture All”: Adds the entire title to the Playlist title as one scene. After capturing the title, select “Scene List” and go to step 12.
“Check Scenes”: Allows you to check the captured scene.

7 Select “Capture,” and press ENTER.
The display for setting the start point (IN) appears. The title starts to play in the background.



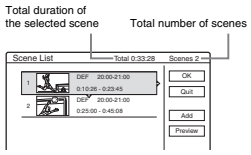
8 Select the IN point by pressing ◀◀/▶▶, and press ENTER.
The display for setting the end point (OUT) appears, and the title continues to play in the background.



9 Select the OUT point by pressing ◀◀/▶▶, and press ENTER.
The display asks for confirmation. To reset the IN or OUT point, select “Change IN” or “Change OUT” and repeat step 8 or 9. To view the selected scene, select “Preview.”

10 Select “OK,” and ENTER.
The selected section is captured as a scene, and the display asks whether you want to continue. To continue, select “More,” and repeat the steps above. To capture a scene from another title, select “New Title.”

11 When you finish capturing scenes, select “No More” and press ENTER.
The Scene List menu appears with all of the selected scenes.



Editing

→continued

12 Select the scene you want to edit, and press ENTER.
The sub-menu appears.
“Move”: Changes the scene order.
“Erase”: Erases the scene. The selection is cancelled.
“Preview”: Displays thumbnail pictures of the scenes.
“Change IN”: Allows you to change the IN point, and repeat from step 8.
“Change OUT”: Allows you to change the OUT point, and repeat from step 9.

To add more scenes, select “Add” and go to step 6. To preview all of the captured scenes in the listed order, select “Preview.”

13 When you finish editing the Scene List, select “OK,” and press ENTER.
The display for entering the title name appears. To enter a new name, select “Enter” (see page 40).

14 Select “OK” to use the default name, and press ENTER.

To play the Playlist title

Press TOOLS while the Title List menu is turned on. Then, select “Playlist” and press ENTER. When the Title List (Playlist) menu appears, select a title and press ▻.

Hint

When a Playlist title is created, the IN and OUT points will become chapter marks, and each scene will become a chapter.

Note

The picture may pause when the edited scene is played.

Moving a Playlist title (Move)

-RWVR

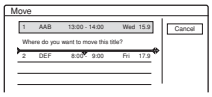
You can change the Playlist title order within the Title List (Playlist).

1 Press TITLE LIST to turn on the Title List (Playlist) menu.
If the Title List (Original) menu appears, press TOOLS and select “Playlist.”

2 Select “Number” in the “Sort” column, and press ENTER.
The titles are sorted in order of title number.

3 Select a title, and press ENTER.
The sub-menu appears.

4 Select “Move,” and press ENTER.



5 Select a new location for the title by pressing ↑/↓, and press ENTER.
The title moves to the new location.

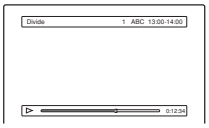
Dividing a Playlist title (Divide)

-RWVR

1 Press TITLE LIST to turn on the Title List (Playlist) menu.
If the Title List (Original) menu appears, press TOOLS and select “Playlist.”

2 Select a title, and press ENTER.
The sub-menu appears.

3 Select “Divide,” and press ENTER.
The display for setting the dividing point appears. The title starts to play in the background.



4 Select the dividing point by pressing ◀◀/▶▶, and press ENTER.
The display asks for confirmation. To change the dividing point, select “Change.”

5 Select “OK,” and press ENTER.
The display for entering the title name appears. To use the same title name as before, select “No.”

6 Select “Yes,” and press ENTER to enter a new name.
Follow the explanations on page 40. After you enter a new name, the title is divided in two.

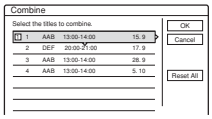
Combining multiple Playlist titles (Combine)

-RWVR

1 Press TITLE LIST to turn on the Title List (Playlist) menu.
If the Title List (Original) menu appears, press TOOLS and select “Playlist.”

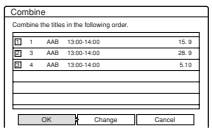
2 Press TOOLS to select “Combine,” and press ENTER.
The display for selecting titles appears.

3 Select a title, and press ENTER.
A number indicating the order in which you selected the title appears. To cancel the selection, press ENTER again.



4 Repeat step 3 to select all of the titles you want to combine.
To cancel all of the selections, select “Reset All.”

5 Select “OK,” and press ENTER.
The list of titles to be combined appears. To change the selection, select “Change” and go to step 3.



6 Select “OK,” and press ENTER.
The display for selecting a title name from among the selected titles appears. To enter a new name, select “Enter Text,” and follow the explanations on page 40.

7 Select a name, and press ENTER.
The titles are combined.

Editing

Before Dubbing

HDD +RW -RWVR -RWVideo +R -R

In this section, “dubbing” refers to “copying a recorded title on the internal hard disk drive (HDD) to another disc, or vice versa.” You can select to dub one title at a time (Title Dubbing – see “Dubbing a Single Title (Title Dub)” on page 74), or multiple titles all at once (Multiple Title Dubbing – see “Dubbing Multiple Titles (Dub Selected Titles)” on page 75).
Before you start, read the following precautions, which are common to both dubbing methods.

Hint
This section deals with dubbing to and from the internal HDD. If you want to record from a digital video camera connected to the DV IN jack, see “DV Dubbing” (page 77). To record from equipment connected to the LINE IN jacks, see “Recording From Connected Equipment Without a Timer” (page 52).

Before you start…

- Select the disc type according to your needs (page 8). This recorder can record on various discs.
- You cannot record both the main and sub sound on a DVD+RW, DVD-RW (Video mode), DVD+R, or DVD-R. For bilingual programs, set “DVD Bilingual Rec.” to either “Main” (default) or “Sub” in Options Setup (page 97).
- Timer recordings and Synchronized recordings do not start during dubbing. Before you start, check the Timer List menu to see if there is any timer recording due to start during dubbing.
- Chapter marks in the original recording do not remain in the dubbed title. Chapter marks are entered according to the “Auto Chapter” setting in Features Setup (page 93).
- For a title whose aspect ratio (16:9 or 4:3) is mixed:
  – When dubbed from the HDD to DVD-RW (Video mode) or DVD-R, the picture size is determined by the setting in “DVD Rec. Picture Size” (page 49).
  – When dubbed from HDD to DVD+RW or DVD+R, the picture size is always 4:3.
  – When dubbed from HDD to DVD-RW (VR mode), the originally recorded picture size is retained.

Hints
- You can dub a Playlist title on a DVD-RW (VR mode) as an original title on the HDD.
- When dubbed from a DVD to the HDD, the picture size and the sound types originally recorded are retained.

Notes
- The recorder may not function as described depending on the disc status. Follow the instructions that appear on the screen.
- When a message appears and indicates that the control information is full, erase unnecessary titles (page 65).
- You cannot dub from DVD VIDEOs or a DVD recorded on other DVD equipment to the HDD.
- Thumbnails that you have set for the originally recorded title (page 34) will not be retained in the dubbed title.

About “Dub Mode”

With this recorder, the recording mode for dubbing is displayed as “Dub Mode.” Two dubbing method are available: High-speed Dubbing and Rec Mode Conversion Dubbing. Read the following and select according to the required time, disc space, and picture quality.

Dubbing at high-speed (High-speed Dubbing)

HDD ➡ +RW / -RWVR / -RWVideo / +R / -R

Allows you to dub what you have stored in the HDD to a high-speed DVD (4x-speed DVD+RWs/2x-speed DVD-RWs/8x-speed DVD+Rs/8x-speed DVD-Rs, or slower versions of each disc type), without changing the recording mode. Dubbing speed is increased when the recording mode of the original title is of a longer recording mode (such as SLP).
Select “Fast” when selecting the “Dub Mode” in “Dubbing a Single Title (Title Dub)” (page 74) or “Dubbing Multiple Titles (Dub Selected Titles)” (page 75). The minimum required time is as follows (approximate).
Example: When a 120 minute-title is dubbed to a high-speed DVD-R in LP mode, dubbing becomes 12 times faster, and takes a minimum of 10 minutes. (120 minutes ÷ 12 = 10 minutes).

Note that speeds shown in the table are an approximate of the maximum dubbing speed.

Speed*1 / Rec mode	x2.4-speed High-speed DVD+RW	x2-speed High-speed DVD-RW	x4-speed High-speed DVD+R/ DVD-R
HQ	x2.4	x2	x4
HSP	x3.6	x3	x6
SP	x4.8	x4	x8
LP	x7.2	x6	x12
EP	x9.6	x8	x16
SLP	x1	x12	x24*2

*1 Maximum recording speed of this recorder.
*2 When dubbing to DVD+Rs, the dubbing speed is x1-speed.

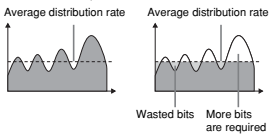
Notes
- High-speed Dubbing is not available for the following titles:
  – Titles recorded in HQ+.
  – Titles that contain both main and sub sounds (except DVD-RWs (VR mode)).
  – Titles recorded in mixed picture size (4:3 and 16:9 etc.), (except DVD-RWs (VR mode)).
  – Titles recorded in SLP (DVD+RW/DVD+R only).
- When dubbed to a DVD-RW (Video mode)/ DVD+RW/DVD+R/DVD-R, erased pictures may remain on the disc.

Rec Mode Conversion Dubbing

HDD ↔ +RW / -RWVR / -RWVideo / +R / -R

Allows you to dub from the HDD to a DVD or vice versa, in a dubbing mode that differs from the original recordings. For example, when you dub an HQ title (data size is large) in SP mode, you can reduce the data size, saving more titles using less space.
Select a mode different from the original recording in “Dub Mode” in the steps of “Dubbing a Single Title (Title Dub)” (page 74) or “Dubbing Multiple Titles (Dub Selected Titles)” (page 75).
When an HQ or HQ+ title is converted to another mode, the recorder automatically assigns an appropriate bit rate, thus retaining the original picture quality as much as possible (“Dynamic VBR Dubbing”).

◆About “VBR”
VBR (Variable Bit Rate) is an effective method of allocating a suitable bit amount per second. Fine detail pictures or dynamically moving pictures are assigned a larger amount, while static pictures are assigned less, for optimum picture quality.


• Variable bit rate (adopted for this recorder)
• Fixed bit rate
Average distribution rate
Average distribution rate
Wasted bits
More bits are required

Hint
When you dub an edited title using the Rec Mode Conversion Dubbing method, pauses between scenes are smoothed out.

Note
The picture quality will not improve even if a title is converted to a recording mode of better picture quality.

Dubbing restriction

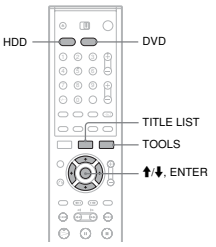
Some DVD VIDEOs or TV programmes contain copy protection signals such as “Copy-Never” or “Copy-Once.” You cannot record such contents on this recorder (only a grey, blank screen will be recorded). Be especially careful when dubbing on a non-rewritable DVD such as a DVD-R.

Copy protection signals	Original recording	Dubbing
Copy-Free	HDD	+RW -RWVR -RWVideo +R -R
	+RW -RWVR -RWVideo +R -R	HDD
Copy-Once	HDD -RWVR*	recorded in grey.
Copy-Never	recorded in grey.	

* Version 1.1 CPRM-compatible DVD-RW (VR mode) only (page 8).

Dubbing a Single Title (Title Dub)

HDD +RW -RWVR -RWVideo +R -R



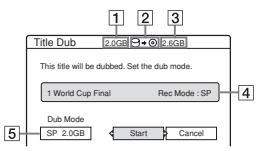
1 Insert the DVD that you are going to dub to or from.

2 Select the source by pressing HDD or DVD.

3 Press TITLE LIST to turn on the Title List menu.

4 Select a title and press ENTER.
The sub-menu appears.

5 Select “Dubbing” and press ENTER.
The display for selecting the dubbing mode appears.



1 Size of the title (approximate)
2 Direction of dubbing.
3 Available space on the disc to be dubbed (approximate).
4 Information about the title to be dubbed.
5 Dubbing mode and the space that remains after dubbing (approximate).

6 Select “Dub Mode.”

7 Select a dubbing mode by pressing ↑/↓.

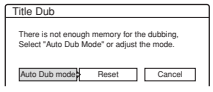
→Fast* → HQ → HSP → SP →
SLP ← EP ← LP ←

* Appears when High-speed Dubbing is available for the title (page 72).

8 Select “Start,” and press ENTER.

To automatically adjust the dubbing mode (Auto Dub Mode)

The recorder adjusts the dubbing mode in order to fit a title on the disc. If there is insufficient disc space in the selected dubbing mode, the following display appears after step 8.



Select “Auto Dub mode” and press ENTER to start dubbing. To manually select another dubbing mode, select “Reset,” and go to step 7.

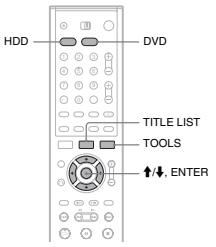
To stop dubbing

Press TOOLS to turn on the TOOLS menu. Or, while the Title List menu is displayed, press ENTER to display the sub-menu. Select “Stop Dubbing,” and press ENTER. When asked for confirmation, select “Yes,” and press ENTER.

Hints
- If disc space is still insufficient for the selected dubbing mode, erase unnecessary parts of the title, or free up disc space by erasing titles on the disc (page 67).
- You can turn off the recorder without affecting the dubbing. Press I/⏻ during dubbing.
- You can start Title Dubbing by selecting “DUBBING” from the System Menu.

Dubbing Multiple Titles (Dub Selected Titles)

HDD +RW -RWVR -RWVideo +R -R



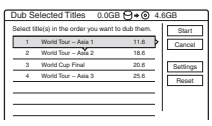
1 Insert the DVD that you are going to dub to or from.

2 Select the source by pressing HDD or DVD.

3 Press TITLE LIST to turn on the Title List menu.

4 Press TOOLS.
The TOOLS menu appears.

5 Select “Dub Selected Titles,” and press ENTER.
The display for selecting titles appears.



6 Select titles in the order you want to dub, and press ENTER.
The titles are numbered in the selected order. To cancel the selection, press ENTER again.

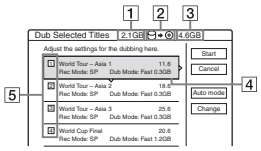
7 Repeat step 6 to select all of the titles you want to dub.
To make adjustments for each of the titles, select “Settings” (see “Making settings for each title” below). To cancel all of the selections, select “Reset,” and go to step 6.

8 Select “Start,” and press ENTER.

Adjusting the settings for each title

You can make detailed settings for each of the selected titles during Multiple Title Dubbing.

1 In step 7 of “Dubbing Multiple Titles (Dub Selected Titles)” (page 75), select “Settings” and press ENTER.
The following display for making the adjustments appears. To re-select titles, select “Change,” and go to step 6 of “Dubbing Multiple Titles (Dub Selected Titles)” above. To have the recorder adjust the dubbing mode so all of the selected titles fit in, select “Auto Mode.”


1 2 3
Dub Selected Titles
2.1GB
4.6GB
Adjust the settings for the dubbing here.
1 World Tour – Asia 1 11.6
Rec Mode: SP Dub Mode: Fast 0.3GB
2 World Tour – Asia 2 18.6
Rec Mode: SP Dub Mode: Fast 0.3GB
3 World Tour – Asia 3 25.6
Rec Mode: SP Dub Mode: Fast 0.3GB
4 World Cup Final 20.6
Rec Mode: SP Dub Mode: Fast 1.2GB
Start
Cancel
Auto mode
Change
5
4

1 Total size of the selected titles.
2 Direction of dubbing.
3 Available space on the disc to be dubbed (approximate).
4 Information about the title to be dubbed (title name, original recording mode, dubbing mode, and data size after dubbing).
5 Order of dubbing.

2 Select the title which you want to adjust, and press ENTER.
The sub-menu appears.
“Dub Mode”: Selects the dubbing mode for each title (see page 72).

➡continued

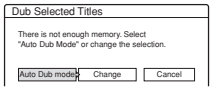
"Change Order": Moves the title to change the dubbing order. Press ↑/↓ to select a new location, and press ENTER.
"Cancel": Cancels the title selection. The title is excluded from dubbing.

3 Select an option, and press ENTER.

4 When you finish making adjustments, select "Start," and press ENTER.

To automatically adjust the dubbing mode (Auto Dub Mode)

The recorder adjusts the dubbing mode so all of the titles fit in. The same dubbing mode is set for all of the titles. If disc space is insufficient for the selected dubbing mode, the following display appears after step 8 of "Dubbing Maltiple Titles" (page 75).



Select "Auto Dub mode" and press ENTER. If you have selected only one title, select "OK."

To stop dubbing

Press TOOLS to turn on the TOOLS menu. Select "Stop Dubbing" and press ENTER. When asked for confirmation, select "Yes," and press ENTER.

Hints

- You can turn off the recorder without affecting the dubbing. Press I/⏻ during dubbing.
- You can start Multiple Title Dubbing by selecting "DUBBING" from the System Menu.

Before DV Dubbing

This section explains dubbing with a digital video camera via the DV IN jack on the front panel. If you want to dub by way of the LINE IN jacks, see "Recording From Connected Equipment Without a Timer" on page 52.

To record from the DV IN jack

The DV IN jack on this recorder conforms to the i.LINK standard. You can connect any other equipment that has an i.LINK (DV) jack, and record digital signals.
Follow the instructions in "Preparing for recording using the DV IN jack," and then move on to the section on dubbing. For more information about i.LINK, see "About i.LINK" (page 106).

Hint

If you plan to do additional editing on a disc after the initial dub, use the DV IN jack and record on a DVD-RW (VR mode) or HDD.

Preparing for recording using the DV IN jack

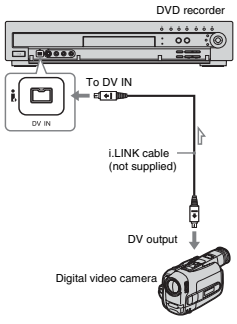
You can connect a digital video camera to the DV IN jack on the recorder to record or edit from a DV format tape. Operation is straightforward because the recorder will fast forward and rewind the tape for you – you do not need to operate your digital video camera. Do the following to start using the "DV Edit" functions of this recorder.
See the instruction manual supplied with the digital video camera as well before connecting.

Notes

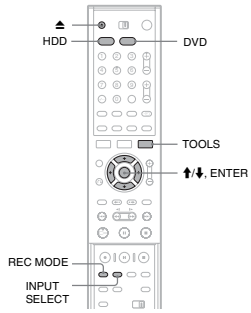
- The DV IN jack is for input only. It will not output signals.
- You cannot use the DV IN jack when:
  – your digital video camera does not work with this recorder. Connect the camera to the LINE IN jack and follow the instructions of "Recording From Connected Equipment Without a Timer" (page 52).
  – the input signal is not in DVC-SD format. Do not connect a MICRO MV format digital video camera even if it has an i.LINK jack.
  – the images on the tape contain copy protection signals, which limit recording.

- If you want to play the disc on other DVD equipment, finalize the disc (page 37).

Hookups



: Signal flow



1 Press HDD or DVD.

If you select DVD, press ⏏ (open/close) and place a DVD on the disc tray. Press ⏏ again to close the disc tray.

Wait until "LOAD" disappears from the front panel display.
If you use an unused DVD, formatting starts automatically.

2 Insert the source DV format tape into your digital video camera.

For the recorder to record or edit, your digital video camera must be set to video playback mode.

3 Press INPUT SELECT on the remote repeatedly to select "DV."

The front panel display changes as follows:

Programme position → L1 → L2 → L3 → L4 → DV

4 Press REC MODE on the remote repeatedly to select the recording mode.

The recording mode changes as follows:

HQ → HSP → SP → LP → EP → SLP

For details about the recording mode, see page 41.

5 Press TOOLS on the remote to select "DV Audio Input," and press ENTER. Then, select the setting for the audio input.

"Stereo1" (default): Records original sound only. Normally select this when dubbing a DV format tape.
"Mix": Records both stereo 1 and 2.
"Stereo2": Records additional audio only. Select "Mix" or "Stereo2" only if you have added a second audio channel when recording with your digital video camera.
You are ready to start dubbing. Select one of the dubbing methods on the following pages.

Hints

- You can turn off the recorder during dubbing. The recorder completes dubbing even after being turned off.
- You can adjust the settings for the recording picture before recording. See "Adjusting the recording picture quality and size" (page 49).

Notes

- You cannot connect more than one piece of digital video equipment to the recorder.
- You cannot control the recorder using another device or another recorder of the same model.
- You cannot record date, time, or the contents of the cassette memory onto the disc.
- If you record from a DV format tape with a sound track that is recorded in multiple sampling frequencies (48 kHz, 44.1 kHz, or 32 kHz), no sound or an unnatural sound will be output when playing back the sampling frequency switch point on the disc.
- In order to use this recorder's Auto Scene Chaptering function (pages 79, 80), be sure to correctly set the clock on your digital video camera before shooting.
- The recorded picture may be momentarily affected if the picture size of the source image changes, or if there is nothing recorded on the tape.

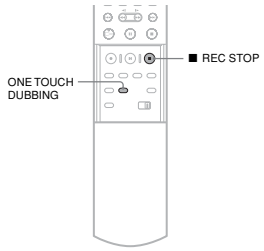
Recording an Entire DV Format Tape (One Touch Dubbing)

HDD +RW -RWVR -RWVideo +R -R

You can record the entire contents of a DV format tape onto a disc with a single press of the ONE TOUCH DUBBING button. The recorder controls the digital video camera for the whole process, and completes the recording.

◆How chapters are created

The dubbed contents on the disc become one title, and the title is divided into chapters. For the HDD and a DVD-RW (VR mode), every shooting on the tape becomes a chapter on the disc (Auto Scene Chaptering function). For other discs, the recorder divides the title in either 6 or 15-minute intervals, according to the setting in "Auto Chapter" in Features Setup.



Follow steps 1 to 5 of "Preparing for recording using the DV IN jack" (page 77), and press ONE TOUCH DUBBING on the remote.

The recorder rewinds the tape and then starts recording the tape contents.
When the recording is finished, the recorder rewinds the tape in the digital video camera.

To stop during recording

Open the remote's cover and press ■ REC STOP. Note that it may take a few seconds for the recorder to stop recording.

Hints

- If you set "Finalize Disc" to "Auto" in Features Setup (page 96), the recorded disc (except DVD-RW(VR mode)) will automatically be finalized after recording is finished.
- You can play back a previously recorded title on the HDD while One Touch Dubbing is in progress.

Notes

- When a blank space between the recordings on the tape continues for more than five minutes, One Touch Dubbing ends automatically.
- The recorder records a blank for five minutes before it stops dubbing. To stop the blank recording, press ■ REC STOP.

Program Edit

HDD +RW -RWVR -RWVideo +R -R

You can select scenes from a DV format tape, and then automatically record selected scenes to a disc of your choice.

To use this function, you will do the following:

Connect your digital video camera and prepare for recording

↓

Select and edit the scenes you want to dub

Using the recorder's remote control, fast forward or rewind the tape to select the scenes. At this point, the selected scenes are not copied to the disc. The recorder only remembers the IN and OUT points of the scenes that you selected for dubbing. You can also reset, erase, or change the order of the scenes.

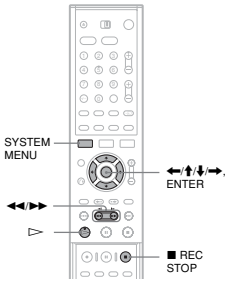
↓

Dub the selected scenes to a disc

After you have selected the scenes, the recorder will fast forward and rewind the tape automatically and record the scenes to a disc of your choice.

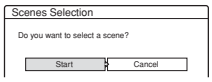
◆How chapters are created

The dubbed contents on the disc become one title, and the title is divided into chapters. For a DVD-RW (VR mode) and the HDD, every shooting on the tape and each selected scene becomes a chapter on the disc (Auto Scene Chaptering function). For other discs, the recorder divides the title in either 6 or 15-minute intervals, according to the setting in "Auto Chapter" in Features Setup.



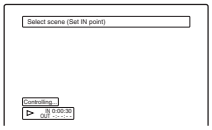
1 Follow steps 1 to 5 of "Preparing for recording using the DV IN jack" (page 77), and press SYSTEM MENU.

2 Select "DV EDIT," and press ENTER.
The display asks if you want to start selecting scenes.

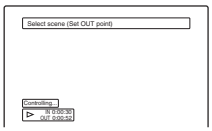


• If you have previously saved a program, the display asks if you want to edit an existing program or to create a new program. To resume editing the existing program, select "Saved Data," and go to step 6.

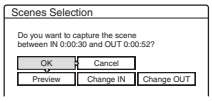
3 Select "Start," and press ENTER.
The display for setting the IN point (start of the scene) appears.
The scene starts to play in the background.



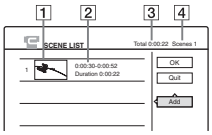
4 Select the IN point by pressing ◀◀/▶▶, and press ENTER.
The display for setting the OUT point (end of the scene) appears. The scene starts to play in the background from the IN point.



5 Select the OUT point by pressing ◀◀/▶▶, and press ENTER.
The display asks if you want to add the selected scene to the Scene List menu. To preview the scene, select "Preview." To reset either the IN or OUT point, select "Change IN" or "Change OUT," and repeat from step 4.



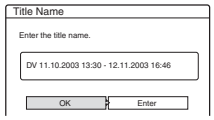
6 Select "OK," and press ENTER.
A new Scene List menu appears with the selected scene.



1 Thumbnail picture
2 Time information
3 Total duration of the program
4 Total number of scenes

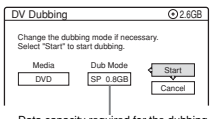
7 When you finish adding scenes, select the scene you want to edit, and press ENTER.
The sub-menu appears.
"Move": Changes the scene order. Follow the explanations on the screen to change the order by pressing ↑/↓ and ENTER.
"Erase": Erases the scene. When asked for confirmation, select "OK."
"Preview": Plays the selected scene.
"Change IN": Changes the start of the scene. Repeat from step 4.
"Change OUT": Changes the end of the scene. Repeat from step 5.

8 When you finish editing the Scene List, select "OK," and press ENTER.
The display for entering the title name appears. To enter a new name, select "Enter," and follow the explanations on page 40.



→continued

9 Select "OK," and press ENTER.
The default title name is fixed, and the display asks if you want to start recording. To change the disc media, select "Media" and press ↑/↓. To change the dubbing mode, select "Dub Mode" and press ↑/↓.



10 Select "Start," and press ENTER.
The recorder starts recording the tape contents as programmed.
• If the recording does not fit due to the dubbing mode you selected, the display asks if you want to continue. To change the dubbing mode, select "Reset" and repeat from step 9. To have the recorder adjust the dubbing mode, select "Auto Dub Mode."
• If there is not enough disc space even after changing the dubbing mode, the display asks if you want to record halfway. To continue, select "OK."

To stop during recording

Open the remote's cover and press ■ REC STOP. Note that it may take a few seconds for the recorder to stop recording.

Notes

- The disc may not be recorded as programmed if the tape's time code is not sequential or there are blanks between the recordings on the tape. In this case, see "Recording From Connected Equipment Without a Timer" (page 52).
- The start and end points of a program may be different from what you have set if the source DV format tape is in any of the following conditions:
  – Recording mode was changed during the recording.
  – There is a blank space in the recorded portion of the tape.
- If you set the beginning of the tape as the IN point and the end point as the OUT point, the IN and OUT points may change slightly during dubbing.
- You cannot set a scene to be shorter than one second.

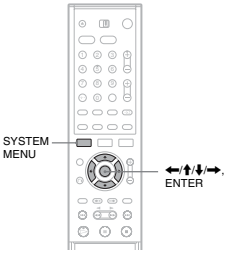
Settings and Adjustments

Using the Setup Displays

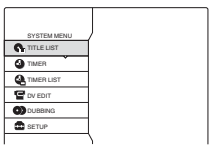
By using the Setup Displays, you can make various adjustments to items such as picture and sound, as well as select a language for the subtitles.
The Setup Displays are used in the following way.

Note

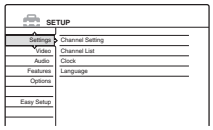
Playback settings stored in some titles take priority over the Setup Display settings, and not all of the functions described may work.



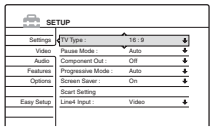
1 Press SYSTEM MENU while the recorder is in stop mode.
The System Menu appears.



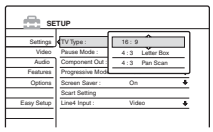
2 Select "SETUP," and press ENTER.
The Setup Display appears.



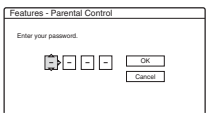
3 Select "Settings," "Video," "Audio," "Features," "Options," or "Easy Setup," and press ENTER.
The selected Setup Display appears.
Example: "Video" setup



4 Select the item you want to set up, and press ENTER.
Available options for the item appear.
Example: "TV Type"



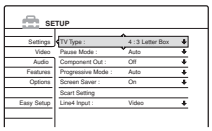
Some items display a dialogue box that provides further detailed settings.
Example: The following dialogue box appears when "Parental Control" in Features Setup is selected.



→continued

In this case, see “Parental Control” in “Recording and Parental Control Settings (Features)” (page 93).

5 Select an option, and press ENTER.
The currently selected option is displayed next to the setup item.
Example: when “4:3 Letter Box” is set.

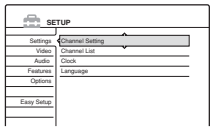


To turn off the display
Press SYSTEM MENU repeatedly.

Aerial Reception and Language Settings (Settings)

The Settings Setup helps you to make tuner, clock, and channel settings for the recorder.

Select “Settings” in the Setup Display. To use the display, see “Using the Setup Displays” (page 83).

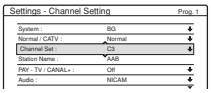


Channel Setting

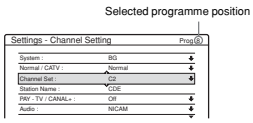
Presets channels manually.
If some channels could not be set using the Easy Setup function, you can set them manually.
If there is no sound or if the picture is distorted, the wrong tuner system may have been preset during Easy Setup. Set the correct tuner system manually in the steps below.

1 Follow steps 1 to 3 of “Using the Setup Displays” (page 83) to select “Settings” in the Setup Display.

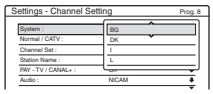
2 Select “Channel Setting,” and press ENTER.



3 Press PROG +/– to select the programme position.



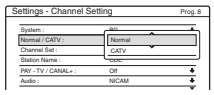
4 Select “System,” and press ENTER.



5 Select an available TV system, BG, DK, I or L, and press ENTER (page 86).

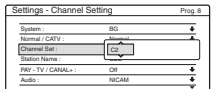
BG	Select this when in West European countries, except those listed in “Receivable channels” (page 86).
DK	Select this when in East European countries.
I	Select this when in Great Britain/ Ireland.
L	Select this when in France.

6 Select “Normal/CATV,” and press ENTER.



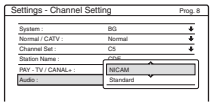
7 Select “Normal,” and press ENTER.
To set CATV (Cable Television) channels, select “CATV.”

8 Select “Channel Set,” and press ENTER.



9 Press ↑/↓ repeatedly until the channel you want is displayed, then press ENTER.
The channels are scanned in the order shown in the table below.
• If you know the number of the channel you want, press the number buttons. For example, for channel 5, first press “0” and then press “5.” Then press ENTER.

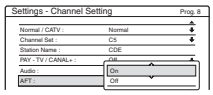
10 Select “Audio,” and press ENTER.



NICAM	Normally, select this.
Standard	Select this if the sound from NICAM broadcasts is not clear.

11 Select “NICAM,” and press ENTER.

12 Select “AFT” and press ENTER.



On	Turns on the Auto Fine Tuning function. Normally, select this.
Off	Allows you to adjust the pictures manually.

13 Select “On” to turn on AFT, and press ENTER.
• If the Auto Fine Tuning function does not work effectively, select “Off” and press ENTER. When the fine tuning bar appears, press ←/→ to obtain a clearer picture, and press ENTER.

To preset another channel, repeat from step 3.

◆Receivable channels

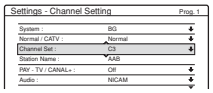
TV system	Channel coverage
BG (West European Countries, except those listed below)	E2 - E12 VHF
	Italia A – H VHF
	E21 – E69 UHF
	S1 – S20 CATV
	S21 – S41 HYPER
	S01 – S05 CATV
DK (East European Countries)	R1 – R12 VHF
	R21 – R69 UHF
	S1 – S20 CATV
	S21 – S41 HYPER
	S01 – S05 CATV
I (Great Britain/ Ireland)	Ireland A – J VHF
	South Africa 4 – 13 VHF
	B21 – B69 UHF
	S1 – S20 CATV
	S21 – S41 HYPER
	S01 – S05 CATV
L (France)	F2 – F10 VHF
	F21 – F69 UHF
	B – Q CATV
	S21 – S41 HYPER

Station Name

Changes or enters a new station name (up to 5 characters). The recorder must receive channel information (for instance, SMARTLINK information) for station names to appear automatically.

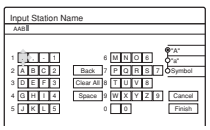
1 Follow steps 1 to 3 of “Using the Setup Displays” (page 83) to select “Settings” in the Setup Display.

2 Select “Channel Setting,” and press ENTER.



3 Press PROG +/– to select the programme position for which you want to change or enter a station name.

4 Select “Station Name,” and press ENTER.
The display for entering characters appears.



To enter characters, see page 40.

5 Select “Finish,” and press ENTER.

PAY-TV/CANAL+

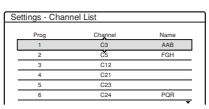
Sets the PAY-TV/Canal Plus channels.
For details, see page 30.

Channel List (Changing/Disabling the channels)

Changes or disables the programme positions after setting the channels. If any programme positions are unused or contain unwanted channels, you can disable them.
You can also change station names. If the station names are not displayed, you can enter them manually.

1 Follow steps 1 to 3 of “Using the Setup Displays” (page 83) to select “Settings” in the Setup Display.

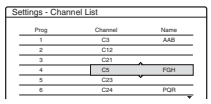
2 Select “Channel List,” and press ENTER.



3 Press ↑/↓ to select the row containing the programme position you want to change or disable.
To change, press ENTER and go to step 4.
To disable, press CLEAR and go to step 6.
The disabled positions will be skipped when you press PROG +/–.

To display other pages for programme positions 7 to 99, press ↑/↓ repeatedly.

4 Press ↑/↓ until the selected channel row moves to the desired programme position.
The selected channel is inserted at the new programme position.



5 Press ENTER to confirm the setting.

6 To change or disable the programme position of another station, repeat from step 3.

Note
Be sure to correctly select the programme position you want to disable. If you disable the wrong programme position by mistake, you need to reset that channel manually.

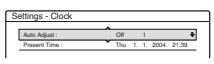
Clock

Auto Adjust

Turns on the Auto Clock Set function when a channel in your local area broadcasts a time signal.

1 Follow steps 1 to 3 of “Using the Setup Displays” (page 83) to select “Settings” in the Setup Display.

2 Select “Clock,” and press ENTER.



3 Select “Auto Adjust,” and press ENTER.

4 Select “On,” and press →.

5 Press ↑/↓ repeatedly until the programme position of the station that carries a time signal appears, and press ENTER.

• If the recorder does not receive a time signal from any station, “Auto Adjust” returns to “Off” automatically and the menu for setting the clock manually appears on the screen.

Hint
If you set “Auto Adjust” to “On,” the Auto Clock Set function is activated whenever the recorder is turned off.

Note
The Auto Clock Set function does not work while the recorder is standing by for Synchro-Recording.

◆To set the clock manually
If the Auto Clock Set function did not set the clock correctly for your local area, try another station for the Auto Clock Set function or set the clock manually.

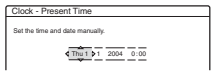
1 Follow steps 1 to 3 of “Using the Setup Displays” (page 83) to select “Settings” in the Setup Display.

2 Select “Clock,” and press ENTER.

3 Select “Auto Adjust,” and press ENTER.

4 Select “Off,” and press ENTER.

5 Select “Present Time,” and press ENTER.



6 Press ↑/↓ to set the day, and press →.
Set the month, year, hour, and minutes in sequence. Press ←/→ to select the item to be set, then press ↑/↓ to set the numbers. The day of the week is set automatically.

To change the numbers, press ← to return to the item to be changed, and press ↑/↓.

7 Press ENTER to start the clock.

Language

OSD (On-Screen Display)
Switches the display language on the screen.

DVD Menu (DVD VIDEO only)
Switches the language for the DVD menu.

Audio (DVD VIDEO only)
Switches the language of the sound track.
When you select “Original,” the language given priority in the disc is selected.

Subtitle (DVD VIDEO only)
Switches the language of the subtitles recorded on the disc.
When you select “Audio Follow,” the subtitle language changes according to the language you selected for the sound track.

Hint
If you select “Others” in “DVD Menu,” “Subtitle,” or “Audio,” select and enter a language code from “Language Code List” (page 114) using the number buttons.

Note
If you select a language in “DVD Menu,” “Subtitle,” or “Audio” that is not recorded on the DVD VIDEO, one of the recorded languages will be automatically selected.

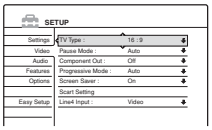
Video Settings (Video)

Video settings will adjust items related to the image, such as size and colour.
Choose the settings according to the type of TV, tuner, or decoder connected to the DVD recorder.

1 Press SYSTEM MENU while the recorder is in stop mode.

2 Select “SETUP,” and press ENTER.

3 Select “Video,” and press ENTER.
The Video Setup appears with the following options. The default settings are underlined.



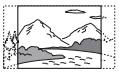
TV Type
Selects the aspect ratio of the connected TV (4:3 standard or wide).

16:9	Select this when connecting to a wide-screen TV or TV with a wide mode function.
4:3 Letter Box	Select this when connecting to a 4:3 screen TV. Displays a wide picture with bands on the upper and lower portions of the screen.
4:3 Pan Scan	Select this when connecting to a 4:3 screen TV. Automatically displays a wide picture on the entire screen and cuts off the portions that do not fit.

16:9

4:3 Letter Box

4:3 Pan Scan



Note
Depending on the disc, “4:3 Letter Box” may be selected automatically instead of “4:3 Pan Scan” or vice versa.

Pause Mode (HDD/DVDs only)
Selects the picture quality in pause mode.

Auto	The picture, including subjects that move dynamically, is output with no jitter. Normally select this position.
Frame	The picture, including subjects that do not move dynamically, is output in high resolution.

Component Out
Selects whether or not to output video signals from the COMPONENT VIDEO OUT jacks.

On	Outputs the component video signals. Select this when you want to view progressive signals.
Off	Outputs no signals.

Notes
- When you set “Line1 Output” to “RGB,” you cannot set “Component Out” to “On.”
- When you connect the recorder to a monitor or projector via only the COMPONENT VIDEO OUT jacks, do not select “Off.” If you select “Off” in this case, the picture may not appear.

Progressive Mode
DVD software can be divided into two types: film based software and video based software. Video based software is derived from TV, such as dramas and sit-coms, and displays images at 30 frames/60 fields (25 frames/50 fields) per second. Film based software is derived from film and displays images at 24 frames per second. Some DVD software contains both Video and Film.
In order for these images to appear natural on your screen when output in PROGRESSIVE mode (50 or 60 frames per second), the progressive video signal needs to be converted to match the type of DVD software that you are watching.
You can fine-tune the progressive 525p/625p video signal that is output when you press PROGRESSIVE (“PROGRESSIVE” lights up). Note that you must connect to a progressive format TV using the COMPONENT VIDEO OUT jacks (page 15).

Auto	Automatically detects the software type (Film-based or Video-based) and selects the appropriate conversion mode. Normally select this position.
Video	Fixes the conversion mode to the mode for Video-based software.

Screen Saver
The screen saver image appears when do not use the recorder for more than 10 minutes while the power is turned on. The screen saver image helps prevent your display device from becoming damaged (ghosting).

On	Turns on the screen saver function.
Off	Turns off the function.

➡continued

Scart Setting
Sets the method of inputting/outputting signals from the SCART jacks on the rear panel of the recorder. Select an option for each of the items below according to the combination of jacks and methods that you are going to use.

◆Line1 Output
Selects a method of outputting video signals for the LINE 1-TV jack.

RGB	Outputs RGB signals.
Video	Outputs video signals.
S Video	Outputs S-video signals.

Notes
- If your TV does not accept S-video or RGB signals, no picture appears on the TV screen even if you select “S Video” or “RGB.” See the instructions supplied with your TV.
- You cannot select ”RGB” when “Component Out” above is set to “On.”
- SMARTLINK is available only when “Video” is selected.

◆Line3 Input
Selects a method of inputting video signals for the LINE 3/DECODER jack. The picture will not be clear if this setting does not match the type of video input signal.

Video/RGB	Inputs video signals or RGB signals.
Decoder	Select this when connecting to a PAY-TV/Canal Plus decoder.
S Video	Inputs S-video signals.

◆Line3 Output
Selects a method of outputting video signals for the LINE 3/DECODER jack.

Video	Outputs video signals.
S Video	Outputs S-video signals.

Line4 Input
Selects a method of inputting video signals for the LINE 4 IN jack on the rear panel of the recorder.

Video	Inputs video signals.
S Video	Inputs S-video signals.

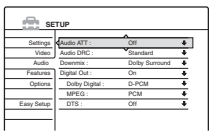
Audio Settings (Audio)

The Audio Setup allows you to adjust the sound according to the playback and connection conditions.

1 Press SYSTEM MENU while the recorder is in stop mode.

2 Select “SETUP,” and press ENTER.

3 Select “Audio,” and press ENTER.
The Audio Setup appears with the following options. The default settings are underlined.



Audio ATT (attenuation)
If the playback sound is distorted, set this item to “On.” The recorder reduces the audio output level. This function affects the output of the following jacks:
– LINE 2 OUT AUDIO L/R jacks
– LINE 1-TV jack
– LINE 3/DECODER jack

On	Select this when the playback sound from the speakers is distorted.
Off	Normally select this position.

Audio DRC (Dynamic Range Control) (DVDs only)
Makes the sound clear when the volume is turned down when playing a DVD that conforms to “Audio DRC.” This affects the output from the following jacks:
– LINE 2 OUT AUDIO L/R jacks
– LINE 1-TV jack
– LINE 3/DECODER jack
– DIGITAL OUT (OPTICAL or COAXIAL) jack only when “Dolby Digital” is set to “D-PCM” (page 92).

Standard	Normally select this position.
TV Mode	Makes low sounds clear even if you turn the volume down.
Wide Range	Gives you the feeling of being at a live performance.

Downmix (DVDs only)
Switches the method for mixing down to two channels when you play a DVD which has rear sound elements (channels) or is recorded in Dolby Digital format. For details on the rear signal components, see “Checking the Play Information and Playing Time” (page 38). This function affects the output of the following jacks:
– LINE 2 OUT AUDIO L/R jacks
– LINE 1-TV jack
– LINE 3/DECODER jack
– DIGITAL OUT (OPTICAL or COAXIAL) jack when “Dolby Digital” is set to “D-PCM” (page 92).

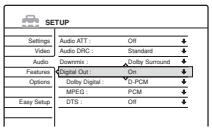
Dolby Surround	Normally select this position. Multi-channel audio signals are output to two channels for enjoying surround sounds.
Normal	Multi-channel audio signals are downmixed to two channels for use with your stereo.

➡continued

Digital Out
Selects if audio signals are output via the DIGITAL OUT (OPTICAL or COAXIAL) jacks.

On	Normally select this position. When you select "On," see "To set the digital output signal" for further settings.
Off	The influence of the digital circuit upon the analogue circuit is minimal.

◆To set the digital output signal
The following setup items switch the method of outputting audio signals when you connect a component such as an amplifier (receiver) with a digital input jack.
For connection details, see "Connecting the Audio Cords" (page 17).
Select "Dolby Digital," "MPEG," and "DTS" after setting "Digital Out" to "On."



If you connect a component that does not accept the selected audio signal, a loud noise (or no sound) will come out from the speakers, and may affect your ears or cause speaker damage.

• Dolby Digital (HDD/DVDs only)
Selects the type of Dolby Digital signal.

D-PCM	Select this when the recorder is connected to an audio component lacking a built-in Dolby Digital decoder. You can select whether the signals conform to Dolby Surround (Pro Logic) or not by making adjustments to the "Downmix" item in Audio Setup (page 91).
Dolby Digital	Select this when the recorder is connected to an audio component with a built-in Dolby Digital decoder.

• MPEG (DVD VIDEO only)
Selects the type of MPEG audio signal.

PCM	Select this when the recorder is connected to an audio component without a built-in MPEG decoder. If you play MPEG audio sound tracks, the recorder outputs stereo signals via the DIGITAL OUT (COAXIAL) jack.
MPEG	Select this when the recorder is connected to an audio component with a built-in MPEG decoder.

• DTS (DVD VIDEO only)
Selects whether or not to output DTS signals.

On	Select this when the recorder is connected to an audio component with a built-in DTS decoder.
Off	Select this when the recorder is connected to an audio component without a built-in DTS decoder.

Note
When you use the DIGITAL OUT (COAXIAL) jack to listen to MPEG audio signals and set "MPEG" to "MPEG" in Audio Setup, no sound will come from your speakers if you select one of the TVS modes.

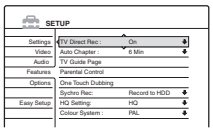
Recording and Parental Control Settings (Features)

The Features Setup allows you to adjust recording and parental control settings.

1 Press SYSTEM MENU while the recorder is in stop mode.

2 Select "SETUP," and press ENTER.

3 Select "Features," and press ENTER.
The Features Setup appears with the following options. The default settings are underlined.



TV Direct Rec (HDD/DVD+RW/DVD-RW/DVD+R/DVD-R only)

On	Allows you to easily record what you are watching on the TV using SMARTLINK.
Off	Turns off the TV Direct Rec function.

Auto Chapter
Automatically divides a recording (a title) into chapters by inserting chapter markings at a specified interval. The markings are inserted while the recording is being made.

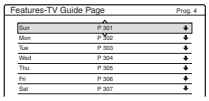
Off	No chapter mark is inserted.
6Min	Inserts chapter marks at approximately 6-minute intervals.
15Min	Inserts chapter marks at approximately 15-minute intervals.

Notes
- Depending upon the size of the recording being made, the actual interval may vary from the interval selected in "Auto Chapter." The selected interval should only be used as an approximation to create chapters.
- This function is not available when dubbing DV tapes to HDD and DVD-RWs (VR mode). Chapter marks are automatically entered where the recordings start on the tape (pages 79, 80).

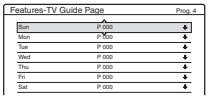
TV Guide Page
Some broadcast systems ensure a Teletext service* in which the complete programmes and their data (title, date, channel, recording start time, etc.) are stored day by day. A TV guide page corresponds to each day of the week. When recording a programme, the recorder automatically takes the programme name from the Teletext pages and stores it as the title name. The TV guide page numbers depend entirely on the broadcast itself and may be subject to change. If so, you may have to set those TV guide page numbers manually in the TV Guide Page menu.
* Not available in some areas.

1 After step 3 above, select "TV Guide Page" and press ➡ or ENTER.
The TV Guide Page menu appears.

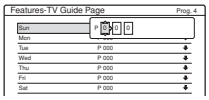
2 Select the programme position for which you want to set or change the TV guide page by pressing PROG +/–.
• The TV guide page numbers (Example: P301) appear automatically when the recorder detects them.



• If no page numbers are detected (P000), you have to set the appropriate TV guide page number manually.



3 Select the TV guide page number you want to modify, and press ENTER.



4 Press the number buttons or ⬅/⬆/⬇/➡ to enter the TV guide page number, and press ENTER to confirm the setting.
• If you make a mistake, press CLEAR to re-enter the correct number.

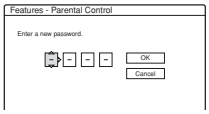
To set or change another TV guide page number, repeat steps 3 and 4 above.

Hint
To view Teletext information on your TV screen during a broadcast, switch to your TV's tuner by pressing ⊡ (TV/video).

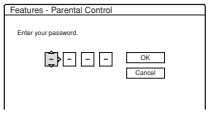
Notes
- In step 4 above, enter "000" if you do not want to use the TV guide page number for automatic labelling. The recorder will instead store a default title name (programme position, start time - stop time).
- Refer to the Teletext information on your TV screen to obtain the TV guide page number with programme titles and their start times.
- If the Teletext TV guide has a page which always shows the programmes for the current day, this page should be input for all days.
- If you start recording more than three minutes before the programme is scheduled to start, the correct label information may not be transferred.
- Note that this function may not work correctly with programmes broadcast from some stations.
- If the broadcast system updates the Teletext information at the moment recording starts, the title label may not correspond to the recorded programme. In this case, you may have to manually enter the correct title (page 65).

Parental Control (DVD VIDEO only)
Playback of some DVD VIDEOs can be limited according to a predetermined level, such as the age of the users. Scenes may be blocked or replaced with different scenes.

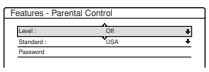
1 After step 3 above, select "Parental Control," and press ENTER.
• If you have not entered a password, the display for registering a new password appears.



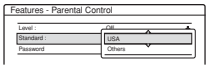
• When you have already registered a password, the display for entering the password appears.



2 Enter your four-digit password using the number buttons, then select "OK" and press ENTER.

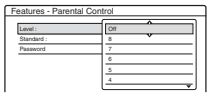


3 Select "Standard," and press ➡ or ENTER.
The selection items for "Standard" are displayed.



4 Select a geographic area as the playback limitation level, and press ENTER.
The area is selected.
• When you select "Others," press the number buttons to select and enter an area code in the table (see below). Then select "OK" and press ENTER.

5 Select "Level," and press ENTER.
The selection items for "Level" are displayed.



The lower the value, the stricter the limitation.

6 Select the level, and press ENTER.
The Parental Control setting is complete.

To cancel the Parental Control setting for the disc, set "Level" to "Off" in step 6.
To change the password, select "Password" in step 3, and press ENTER. When the display for registering a password appears, enter a new four-digit password using the number buttons, then select "OK" and press ENTER.

Notes
- If you forget your password, you will have to reset it by selecting "Parental Control" under "Factory Setup" in Options Setup (page 97).
- When you play discs which do not have the Parental Control function, playback cannot be limited on this recorder.
- Depending on the disc, you may be asked to change the Parental Control level while playing the disc. In this case, enter your password, then change the level.

◆Area code

Standard	Code number
Argentina	2044
Australia	2047
Austria	2046
Belgium	2057
Brazil	2070
Canada	2079
Chile	2090
China	2092
Denmark	2115
Finland	2165
France	2174
Germany	2109
India	2248
Indonesia	2238
Italy	2254
Japan	2276
Korea	2304
Malaysia	2363
Mexico	2362
Netherlands	2376
New Zealand	2390
Norway	2379
Pakistan	2427
Philippines	2424
Portugal	2436
Russia	2489
Singapore	2501
Spain	2149
Sweden	2499
Switzerland	2086
Thailand	2528
United Kingdom	2184

One Touch Dubbing
Displays the following options for the One Touch Dub function.

◆Finalize Disc (for all recordable discs except DVD-RW in VR mode)
Selects whether or not to finalize the disc automatically following One Touch Dubbing (page 79).

Auto	Automatically finalizes the disc following One Touch Dubbing.
Manual	Allows you to finalize the disc manually.

Colour System
Selects the colour system when playing VIDEO CDs (including Super VCDs).

PAL	Plays a disc in PAL colour system.
NTSC	Plays a disc in NTSC colour system.

Synchro Rec
Selects the recording destination used for Synchro-Recording (page 51).

Record to HDD	Records to the HDD.
Record to DVD	Records to DVDs.

HQ Setting (HDD only)
Selects the HQ mode used for recording on the HDD (page 41).

HQ+	Records in higher quality (approximate 15 Mbps).
HQ	Records in the standard HQ mode.

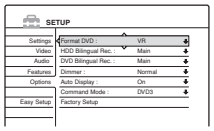
Disc and Remote Control Settings/Factory Settings (Options)

The Options Setup allows you to set up other operational settings.

1 Press SYSTEM MENU while the recorder is in stop mode.

2 Select "SETUP," and press ENTER.

3 Select "Options," and press ENTER.
The Options Setup appears with the following options. The default settings are underlined.



Format DVD (DVD-RW only)
The recorder automatically starts formatting in VR mode or Video mode, whichever is selected below, when a new, unformatted DVD-RW is inserted.

VR	Automatically formats the disc in VR mode.
Video	Automatically formats the disc in Video mode.

HDD Bilingual Rec. (HDD only)
Selects the sound to be recorded on the HDD.

Main	Records the main sound for the bilingual programme.
Sub	Records the sub sound for the bilingual programme.
Main+Sub	Records the main and sub sounds for the bilingual programme.

Note
If you set the recording mode to be changed while dubbing from a DVD to the HDD, the sound recorded in the source (DVD) is applied regardless of this setting.

DVD Bilingual Rec. (for all recordable discs except DVD-RW in VR mode)
Selects the sound to be recorded on the recordable disc. This setting is not necessary when recording on DVD-RWs (VR mode) that record both the main and sub sounds.

Main	Records the main sound for the bilingual programme.
Sub	Records the sub sound for the bilingual programme.

Dimmer
Adjusts the lighting of the front panel display.

Normal	Bright lighting.
Power Save	Low lighting. Turns off the lighting when the power is off.

Auto Display

On	Automatically displays information on the screen when the recorder is turned on, etc.
Off	Displays information only when DISPLAY is pressed.

Command Mode
Changes the Command Mode of the recorder if other DVD equipment is assigned the same Command Mode. Be sure to match the Command Mode switch on the remote to the setting made here. For details, see "If you have a Sony DVD player or more than one Sony DVD recorder" on page 21.

DVD1	Select this if the default Command Mode conflicts with other DVD equipment.
DVD2	Select this if the default Command Mode conflicts with other DVD equipment.
DVD3	The default Command Mode of the recorder.

Factory Setup
Allows you to select the setup settings by group, and return them to their default settings. Note that all of your previous settings will be lost.

1 After step 3 above, select "Factory Setup," and press ➡ or ENTER.
The display for selecting a group of settings appears.

2 Select the group of settings you want to return to default from "Settings," "Video," "Audio," "Features," "Options," "Parental Control," and "All," and press ➡ or ENTER.

3 Select "Start," and press ENTER.
The selected settings return to their default settings.

4 Press ENTER when "Finish" appears.

➡continued

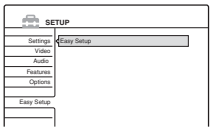
Easy Setup (Resetting the Recorder)

Select this to run the Easy Setup programme.

1 Press SYSTEM MENU while the recorder is in stop mode.

2 Select "SETUP," and press ENTER.

3 Select "Easy Setup," and press ENTER.



4 Press ENTER.

5 Select "Start," and press ENTER.

6 Follow the instructions for Easy Setup (page 22) from step 5.

Additional Information

Troubleshooting

If you experience any of the following difficulties while using the recorder, use this troubleshooting guide to help remedy the problem before requesting repairs. Should any problem persist, consult your nearest Sony dealer.

Power

The power does not turn on.
➡ Check that the mains lead is connected securely.

Picture

There is no picture.
➡ Re-connect all connecting cords securely.
➡ The connecting cords are damaged.
➡ Check the connection to your TV (page 13).
➡ Switch the input selector on your TV (such as to "VCR") so that the signal from the recorder appears on the TV screen.
➡ Check that "Scart Setting" in Video Setup is set to the appropriate item that conforms to your system (page 90).
➡ If you connect the recorder to your TV via only the COMPONENT VIDEO OUT jacks, set "Component Out" in Video Setup to "On" (page 89).
➡ This recorder cannot record NTSC signals.

Picture noise appears.
➡ If the picture output signal from your recorder passes through your VCR to get to your TV, or if you are connected to a combination TV/VIDEO player, the copy-protection signal applied to some DVD programmes could affect picture quality. If you still experience this problem even when you connect your recorder directly to your TV, try connecting your recorder to your TV's S VIDEO input.
➡ You have set the recorder to progressive format (the PROGRESSIVE indicator lights up) even though your TV cannot accept the progressive signal. In this case, press PROGRESSIVE until the progressive indicator turns off.
➡ Even if your TV is compatible with progressive format (525p/625p) signals, the image may be affected when you set the recorder to progressive format. In this case, press PROGRESSIVE so that the PROGRESSIVE indicator turns off and the recorder is set to normal (interlace) format.
➡ You are playing a DVD recorded in a colour system that is different from your TV.
➡ Noises may appear in the pictures recorded on the HDD, which is due to the characteristics of HDD, and is not a malfunction.

TV programme reception does not fill the screen.
➡ Set the channel manually in "Channel Setting" in Settings Setup (page 84).
➡ Select the correct source using the INPUT SELECT button, or select a channel of any TV programme using the PROG +/– buttons.

TV programme pictures are distorted.
➡ Reorient the TV aerial.
➡ Adjust the picture (see the TV's instruction manual).
➡ Place the recorder and TV farther apart.
➡ Place the TV and any bunched aerial cables farther apart.
➡ The RF cable is connected to the AERIAL OUT jack on the recorder. Connect the cable to the AERIAL IN jack.

TV channels cannot be changed.
➡ The channel is disabled (page 86).
➡ A timer recording started, which changed the channels.

The picture from equipment connected to the recorder's input jack does not appear on the screen.
➡ If the equipment is connected to the LINE 1-TV jack, select "L1" in the front panel display by pressing PROG +/– or INPUT SELECT.
If the equipment is connected to the LINE 2 IN jacks, select "L2" in the front panel display by pressing PROG +/– or INPUT SELECT.
If the equipment is connected to the LINE 4 IN jacks, select "L4" in the front panel display by pressing PROG +/– or INPUT SELECT.
If the equipment is connected to the LINE 3/DECODER jack, select "L3" in the front panel display by pressing PROG +/– or INPUT SELECT.

➡continued

If the equipment is connected to the DV IN jack, (this is usually for a digital video camera connection), select "DV" in the front panel display by pressing PROG +/– or INPUT SELECT.

➡ When an S video cable is connected to the recorder's LINE 4 IN jack, set "Line4 Input" in Video Setup to "S Video" (page 90).

The playback picture or TV programme from the equipment connected through the recorder is distorted.

➡ If the playback picture output from a DVD player, VCR, or tuner goes through your recorder before reaching your TV, the copy-protection signal applied to some programmes could affect picture quality. Disconnect the playback equipment in question and connect it directly to your TV.

The picture does not fill the screen.

➡ Set "TV Type" in Video Setup in accordance with the aspect ratio of your TV (page 88).

The picture does not fill the screen, even though the aspect ratio is set in "TV Type" in Video Setup.

➡ The aspect ratio of the title is fixed.

The picture is black and white.

➡ Check that "Line1 Output" of "Scart Setting" in Video Setup is set to the appropriate item that conforms to your system (page 90).

➡ If you are using a SCART cord, be sure to use one that is fully wired (21 pins).

Sound

There is no sound.

➡ Re-connect all connections securely.

➡ The connecting cord is damaged.

➡ The input source setting on the amplifier or the connection to the amplifier is incorrect.

➡ The recorder is in reverse play, fast-forward, slow motion, or pause mode.

➡ If the audio signal does not come through the DIGITAL OUT (OPTICAL or COAXIAL) jacks, check the Audio Setup settings (page 91).

Sound distortion occurs.

➡ Set "Audio ATT" in Audio Setup to "On" (page 91).

Sound is noisy.

➡ When playing a CD with DTS sound tracks, noise will come from the LINE 2 OUT AUDIO L/R jacks, LINE 1-TV jack, or LINE 3/DECODER jack (page 58).

The sound volume is low.

➡ The sound volume is low on some DVDs. The sound volume may improve if you set "Audio DRC" in Audio Setup to "TV Mode" (page 91).

➡ Set "Audio ATT" in Audio Setup to "Off" (page 91).

An alternate audio track cannot be recorded.

➡ When recording from connected equipment, set "Line Audio Input" in TOOLS menu to "Bilingual" (page 52).

➡ Multilingual tracks (main and sub) cannot be recorded on DVD+RWs, DVD-RWs (Video mode), DVD+Rs, or DVD-Rs. To record the language, select "Main" or "Sub" of "DVD Bilingual Rec." in Options Setup before recording (page 97). To record both the main and sub sounds, record on a DVD-RW (VR mode).

➡ Any discs other than the HDD or DVD-RWs (VR mode) cannot be used for recording both main and both sounds. To record on the HDD, set "HDD Bilingual Rec." in Options Setup to "Main+Sub" (page 97).

➡ If you have connected an AV amplifier to the DIGITAL OUT (OPTICAL or COAXIAL) jacks and want to change the audio track for a DVD-RW (VR mode) during playback, set "Dolby Digital" in Audio Setup to "D-PCM" (page 92).

Playback

The recorder does not play any type of disc (except HDD).

➡ The disc is upside down. Insert the disc with the labelled side facing up.

➡ The disc is not correctly inserted.

➡ Moisture has condensed inside the recorder. Remove the disc and leave the recorder turned on for about half an hour until the moisture evaporates.

➡ If the disc was recorded on another recorder, the recorder cannot play the disc if it was not finalized (page 37).

The recorder does not start playback from the beginning.

➡ Resume play was activated (page 54).

➡ You have inserted a DVD whose Title menu or DVD menu automatically appears on the TV screen when it is first inserted. Use the menu to start playback.

The recorder starts playing automatically.

➡ The DVD VIDEO features an auto playback function.

Playback stops automatically.

➡ If the DVD has an auto pause signal, the recorder stops playback at the auto pause signal.

Some functions such as Stop, Search, or Slow-motion Play cannot be performed.

➡ Depending on the DVD, you may not be able to do some of the operations above. See the instruction manual supplied with the disc.

The language for the sound track cannot be changed.

➡ Multilingual tracks are not recorded on the DVD being played.

➡ The DVD VIDEO prohibits the changing of the language for the sound track.

➡ Try changing the language using the DVD VIDEO's menu.

The subtitle language cannot be changed or turned off.

➡ Multilingual subtitles are not recorded on the DVD VIDEO.

➡ The DVD VIDEO prohibits changing of the subtitles.

➡ Try changing the subtitle using the DVD VIDEO's menu.

➡ The subtitles cannot be changed for the titles recorded on this recorder.

The angles cannot be changed.

➡ Multi-angles are not recorded on the DVD VIDEO being played.

➡ You are trying to change the angles when "📹" does not appear on the TV screen (page 56).

➡ The DVD VIDEO prohibits changing angles.

➡ Try changing the angle using the DVD VIDEO's menu.

➡ The angles cannot be changed for the titles recorded on this recorder.

The MP3 audio tracks do not play.

➡ The MP3 audio tracks are not recorded in a format that the recorder can play (page 62).

Recording/Timer recording/Editing

The programme position cannot be changed from the channel you are recording.

➡ Set the TV's input source to "TV."

Recording does not start immediately after you press ● REC.

➡ Operate the recorder only after "LOAD," "FORMAT," or "INFOWRITE" disappears from the front panel display.

Nothing was recorded even though you set the timer setting correctly.

➡ There was a power failure during recording.

➡ The recorder's internal clock stopped due to a power failure that lasted for more than 1 hour. Reset the clock (page 87).

➡ The channel was disabled after the timer recording was set. See "Channel Setting" on page 84.

➡ Disconnect the mains lead from the mains, and connect it again.

➡ "PDC/VPS Scan Off" was selected in the TOOLS menu (page 43).

➡ The programme contains copy protection signals that restrict copying.

➡ Other timer setting overlapped the timer setting (page 47).

➡ There is no DVD inside the recorder.

➡ There is not enough disc space for the recording.

➡ The recorder was in the process of DV Dubbing.

Recording does not stop immediately after you press ■ REC STOP.

➡ It will take a few seconds for the recorder to input disc data before recording can stop.

Recording does not stop after you press ■ STOP.

➡ Open the remote's cover and press ■ REC STOP.

Additional Information

➡continued

Timer recording is not complete or did not start from the beginning.

➡ There was a power failure during recording. If the power recovers when there is a timer recording, the recorder resumes recording. Should the power failure continue for more than 1 hour, reset the clock (page 87).

➡ Other timer setting overlapped the timer setting (page 47).

➡ Disc space was not enough.

➡ The PDC/VPS function is working.

Contents previously recorded were erased.

➡ Data that has been recorded on a DVD with a PC will be erased from the disc when the disc is inserted.

➡ "Auto Title Erase" in the TOOLS menu (appears when you press TOOLS while the Timer List menu is turned on) is set to "On" (page 47).

➡ The title was updated and recorded over (page 42).

The PDC/VPS function does not operate.

➡ Check that the clock and date are set correctly.

➡ Check that the PDC/VPS time you set is the correct one (there might be a mistake in the TV programme guide). If the broadcast you wanted to record did not send the good PDC/VPS information, the recorder will not start recording.

➡ If the reception is poor, the PDC/VPS signal might be altered and the recorder might not start recording.

➡ "PDC/VPS Scan Off" is selected (page 43).

Recording from the equipment with a timer

Nothing was recorded even though you set the Synchro-Rec setting correctly.

➡ You forgot to turn off the connected equipment. Turn off the connected equipment and set the recorder to Synchro-Rec standby mode (page 51).

➡ The recorder was not set to the Synchro-Recording standby mode. Press SYNCHRO REC to have the recorder stand by for recording. Make sure the SYNCHRO REC indicator lights up on the front panel (page 51).

➡ The recorder is connected to the TV output jack of the connected equipment.

Synchro-Recording does not complete.

➡ The timer setting for the connected equipment overlapped the recorder's timer setting (page 52).

➡ There was a power failure during the recording.

The recorder automatically starts recording when the satellite receiver is turned on.

➡ The Synchro-Rec function was activated. Turn off the satellite receiver and cancel the Synchro-Rec function (page 51).

Display

The clock has stopped.

➡ Set the clock again (page 87).

➡ The clock stopped due to a power failure that lasted for more than 1 hour. Reset the clock (page 87).

The TIMER REC indicator is flashing.

➡ The disc does not have enough space.

➡ Insert a recordable disc inside the recorder.

The recording mode indication is incorrect.

➡ When the recording or dubbing is less than three minutes, the recording mode indication may be displayed incorrectly. The actual recording itself is correctly made in the selected recording mode.

The clock does not appear in the front panel display.

➡ "Dimmer" in Options Setup is set to "Power Save" (page 97).

Remote control

The remote does not function.

➡ Batteries are weak.

➡ The remote is too far from the recorder.

➡ The remote's manufacturer code returned to the default setting when you replaced the batteries. Reset the code (page 20).

➡ Turn on the recorder.

➡ The remote is not pointed at the remote sensor on the recorder.

➡ Different command modes are set for the recorder and remote. Set the same command mode (page 21).

➡ Set the TV/DVD switch to DVD (page 21).

Other Sony equipment responds to the remote.

➡ The same command mode is set for both the equipment and recorder. Set a different command mode for the recorder (page 21).

Others

The recorder does not operate properly.

➡ Restart the recorder. Press down I/⏻ on the recorder for more than ten seconds until "WELCOME" appears in the front panel display.

➡ When static electricity, etc., causes the recorder to operate abnormally, turn off the recorder and wait until the clock appears in the front panel display. Then, unplug the recorder and after leaving it off for a while, plug it in again.

Five numbers or letters are displayed in the front panel display.

➡ The self-diagnosis function was activated (see the table on page 104).

The disc tray does not open after you press ⏏ (open/close).

➡ It may take a few seconds for the disc tray to open after you have recorded or edited a DVD. This is because the recorder is adding disc data to the disc.

The disc tray does not open and "TRAY LOCKED" appears in the front panel display.

➡ Contact your Sony dealer or local authorized Sony service facility.

"RECOVERY" appears in the front panel display.

➡ The recorder's recovery function was activated when the recorder was turned on because the power was turned off or failed during recording. Leave the recorder on until "RECOVERY" disappears from the front panel display.

"HDD ERROR" appears in the front panel display.

➡ The hard disk error occurred. Press down I/⏻ on the recorder for ten seconds to restart the recorder. If this does not resolve the problem, format the recorder's HDD by pressing down the HDD button on the recorder for more than ten seconds until "WELCOME" appears in the front panel display. Note that all the contents recorded on the HDD will be erased.

"FAN ERROR" appears in the front panel display.

➡ Check that the vent on the rear of the recorder is not blocked. Then, turn off the recorder, wait until the clock appears in the front panel display, and disconnect the mains lead. Leave the recorder off for a while, then re-connect the mains lead, and press I/⏻ on the recorder.

Mechanical sound is heard when the recorder is off.

➡ While the recorder is adjusting the clock for the Auto Clock Set function or scanning the channels for the PDC/VPS function, operational noises (such as the internal fan) may be heard, even when the power is off. This is not a malfunction.

The disc tray does not open and you cannot remove the disc after you press ⏏ (open/close).

➡ Turn off the recorder. Once the clock appears in the front panel display, disconnect the mains lead. Connect it again while pressing down ⏏ on the recorder, and release the button when the disc tray opens. Then, keep I/⏻ on the recorder pressed for about ten seconds until "WELCOME" appears in the front panel display.

"LOCKED" appears in the front panel display.

➡ The disc tray is locked. Cancel the Child Lock (page 55).

Additional Information

Self-diagnosis Function (When letters/numbers appear in the display)

When the self-diagnosis function is activated to prevent the recorder from malfunctioning, a five-character service number (e.g., C 13 50) with a combination of a letter and four numbers appears in the front panel display. In this case, check the following table.

First three characters of the service number	Cause and/or corrective action
C 13	The DVD is dirty. ➡ Clean the disc with a soft cloth.
C 31	The DVD/CD is not inserted correctly. ➡ Re-insert the disc correctly.
E XX (xx is a number)	To prevent a malfunction, the recorder has performed the self-diagnosis function. ➡ Contact your nearest Sony dealer or local authorized Sony service facility and give the five-character service number. Example: E 61 10

Notes About This Recorder

On operation

- If the recorder is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the recorder. Should this occur, the recorder may not operate properly. In this case, remove the disc and leave the recorder turned on for about half an hour until the moisture evaporates.
- When you move the recorder, take out any discs. If you don't, the disc may be damaged.

On adjusting volume

Do not turn up the volume while listening to a section with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level section is played.

On cleaning

Clean the cabinet, panel, and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

About repairing the hard disk drive

- It may be necessary to access data stored on the hard disk for testing purposes; there is no intention to copy or store the data, titles or any other information.
- If replacement or initialization (format) is required, the hard disk will be formatted at our discretion. In this case, please note that all of the contents recorded there will be erased (including any data found to violate copyright law).

On cleaning discs

Do not use a commercially available cleaning disc. It may cause a malfunction.

Notes about the discs

- To keep the disc clean, handle the disc by its edge. Do not touch the surface. Dust, fingerprints, or scratches on the disc may cause it to malfunction.

- Do not expose the disc to direct sunlight or heat sources such as hot air ducts, or leave it in a car parked in direct sunlight as the temperature may rise considerably inside the car.
- After playing, store the disc in its case.
- Clean the disc with a cleaning cloth. Wipe the disc from the centre out.

- Do not use solvents such as benzine, thinner, commercially available cleaners, or anti-static spray intended for vinyl LPs.
- Do not use the following discs.
  – A disc that has a non-standard shape (e.g., card, heart).
  – A disc with a label or sticker on it.
  – A disc that has cellophane tape or sticker adhesive on it.

Specifications

System

Laser: Semiconductor laser
Channel coverage:
PAL/SECAM (B/G, D/K, I, L)
VHF: E2 to E12, R1 to R12, F1 to F10, Italian A to H, Ireland A to J, South Africa 4 to 13/
UHF: E21 to E69, R21 to R69, B21 to B69, F21 to F69/CATV: S01 to S05, S1 to S20, France B to Q/HYPER: S21 to S41

The above channel coverage merely ensures the channel reception within these ranges. It does not guarantee the ability to receive signals in all circumstances.

Video reception: Frequency synthesizer system
Audio reception: Split carrier system
Aerial out: 75-ohm asymmetrical aerial socket
Timer: Clock: Quartz locked/Timer indication: 24-hour cycle (digital)/Power back-up duration: 1 hour
Video recording format: MPEG Video
Audio recording format/applicable bit rate: Dolby Digital/2 ch, 256 kbps

When you play PCM sound tracks with a 96 kHz sampling frequency, the output signals from the DIGITAL OUT (OPTICAL or COAXIAL) jack are converted to 48 kHz sampling frequency.

Inputs and outputs

LINE 2 OUT
(AUDIO): Phono jack/2 Vrms/10 kilohms
(VIDEO): Phono jack/1.0 Vp-p
(S VIDEO): 4-pin mini DIN/Y:1.0 Vp-p, C: 0.3 Vp-p (PAL)
LINE 2 IN/LINE 4 IN
(AUDIO): Phono jack/2 Vrms/more than 22 kilohms
(VIDEO): Phono jack/1.0 Vp-p
(S VIDEO): 4-pin mini DIN/Y:1.0 Vp-p, C: 0.3 Vp-p (PAL)

➡continued

LINE 1 -TV: 21-pin
CVBS IN/OUT
S-Video/RGB OUT (upstream)
LINE 3/DECODER: 21-pin
CVBS IN/OUT
S-Video/RGB IN
S-Video OUT (downstream)
Decoder
DV IN: 4-pin/i.LINK S100
DIGITAL OUT (OPTICAL): Optical output jack/–18 dBm (wave length: 660 nm)
DIGITAL OUT (COAXIAL): Phono jack/0.5 Vp-p/75 ohms
COMPONENT VIDEO OUT
(Y, P_B/C_B, P_R/C_R):
Phono jack/Y: 1.0 Vp-p, P_B/C_B: 0.7 Vp-p, P_R/C_R: 0.7 Vp-p

General

Power requirements: 220-240 V AC, 50/60 Hz
Power consumption:
RDR-HX900: 54 W
RDR-HX1000: 55 W
Dimensions (approx.): 430 × 89 × 346 mm (width/height/depth) incl. projecting parts
Hard disk drive capacity:
RDR-HX900: 160 GB
RDR-HX1000: 250 GB
Mass (approx.): 5.9 kg
Operating temperature: 5 ºC to 35 ºC
Operating humidity: 25 % to 80 %
Supplied accessories:
Audio/video cord (1)
Mains lead (1)
Aerial cable (1)
Remote commander (remote) (1)
R6 (size AA) batteries (2)

Specifications and design are subject to change without notice.

Compatible colour systems

This recorder is designed to record using the PAL colour system and play back using the PAL or NTSC colour systems.
The signals of the SECAM colour system can be received or recorded but played back in the PAL colour system only. Recording of video sources based on other colour systems cannot be guaranteed.

About i.LINK

The DV IN jack on this recorder is an i.LINK-compliant DV IN jack. This section describes the i.LINK standard and its features.

What is i.LINK?

i.LINK is a digital serial interface for handling digital video, digital audio and other data in two directions between equipment having the i.LINK jack, and for controlling other equipment.
i.LINK-compatible equipment can be connected by a single i.LINK cable. Possible applications are operations and data transactions with various digital AV equipment. When two or more i.LINK-compatible equipment are connected to this recorder in a daisy chain, operations and data transactions are possible with not only the equipment that this recorder is connected to but also with other devices via the directly connected equipment.
Note, however, that the method of operation sometimes varies according to the characteristics and specifications of the equipment to be connected, and that operations and data transactions are sometimes not possible on some connected equipment.

Note

Normally, only one piece of equipment can be connected to this recorder by the i.LINK cable (DV connecting cable). When connecting this recorder to i.LINK-compatible equipment having two or more i.LINK jacks (DV jacks), see the instruction manual of the equipment to be connected.

About the name "i.LINK"

i.LINK is a more familiar term for IEEE 1394 data transport bus proposed by SONY, and is a trademark approved by many corporations.
IEEE 1394 is an international standard standardized by the Institute of Electrical and Electronics Engineers.

i.LINK baud rate

i.LINK's maximum baud rate varies according to the equipment. Three maximum baud rates are defined:
S100 (approx. 100 Mbps*)
S200 (approx. 200 Mbps)
S400 (approx. 400 Mbps)

The baud rate is listed under "Specifications" in the instruction manual of each equipment. It is also indicated near the i.LINK jack on some equipment.
The maximum baud rate of equipment on which it is not indicated such as this unit is "S100."
When units are connected to equipment having a different maximum baud rate, the baud rate sometimes differs from the indicated baud rate.

* What is Mbps?
Mbps stands for megabits per second, or the amount of data that can be sent or received in one second. For example, a baud rate of 100 Mbps means that 100 megabits of data can be sent in one second.

i.LINK functions on this recorder

For details on how to dub when this recorder is connected to other video equipment having DV jacks, see page 77.
The DV jack on this recorder can only input DVC-SD signals. It cannot output signals. The DV jack will not accept MICRO MV signals from equipment such as a MICRO MV digital video camera with an i.LINK jack.
For further precautions, see the notes on page 77.
For details on precautions when connecting this recorder, also see the instruction manuals for the equipment to be connected.

Required i.LINK cable

Use the Sony i.LINK 4-pin-to-4-pin cable (during DV dubbing).

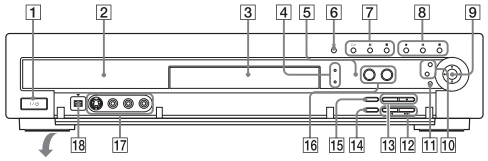
i.LINK and ⁞ are trademarks.

Guide to Parts and Controls

For more information, see the pages in parentheses.

Front panel

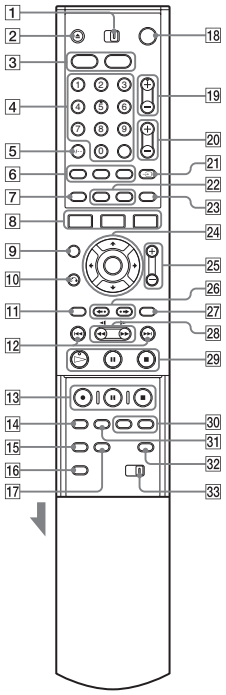
Buttons on the recorder have the same function as the buttons on the remote if they have the same or similar names.



1 I/⏻ (on/standby) button (22)
2 Front panel display (39, 110)
3 Disc tray (42)
4 TIMER REC indicator (42)
SYNCHRO REC indicator (51)
5 (remote sensor) (19)
6 ⏏ (open/close) button (42)
7 ▷ (play) button (54)
❚❚ (pause) button (56)
■ (stop) button (54)
8 ● REC button (48)
❚❚ REC PAUSE button (48)
■ REC STOP button (48)
9 ←/↑/↓/→/ENTER button (22)
10 SYSTEM MENU button (32)
TOOLS button (33)
11 ↶ RETURN button (33)
12 I◀◀ /▶▶I (previous/next) buttons (56)
13 PROGRAM +/– buttons (48)
14 REC MODE button (41)
15 INPUT SELECT button (52, 77)
16 DVD button/indicator (33)
HDD button/indicator (33)
17 LINE 2 IN (S VIDEO/VIDEO/AUDIO L/R) jacks (27)
18 DV IN jack (77)

Remote

Buttons on the remote have the same function as the buttons on the recorder if they have the same or similar names. Buttons with an orange dot next to them can be used with your TV when the TV/DVD switch is set to TV.



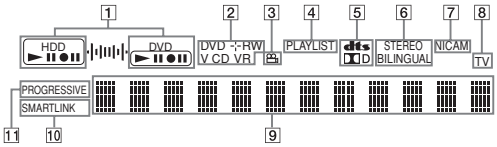
1 TV/DVD switch (20)
2 ⏏ (open/close) button (42, 56)
3 HDD button (33)
DVD button (33)
4 Number buttons (44, 61)
SET button (44)
The number 5 button has a tactile dot*.
5 CLEAR/-/-- (ten digit) button (44)
6 (audio) button (56)
(subtitle) button (56)
(angle) button (56)
7 TIMER button (42, 44)
8 SYSTEM MENU button (32)
TITLE LIST button (33, 54, 65)
TOOLS button (33)
9 CURSOR MODE button (33)
10 ↶ RETURN button (33)
11 TOP MENU button (54)
12 I◀◀ (previous)/▶▶I (next) buttons (56)
13 ● REC button (48)
❚❚ REC PAUSE button (48)
■ REC STOP button (48)
14 REC MODE button (41)
15 SYNCHRO REC button (51)
16 PROGRESSIVE button (16)
17 ONE TOUCH DUBBING button (79)
18 I/⏻ (on/standby) button (22)
19 PROG (programme) +/– buttons (48)
The + button has a tactile dot*.
20 (volume) +/– buttons (20)
21 (TV/video), TV/DVD button (20)
22 DISPLAY button (38)
TIME/TEXT button (38)
23 (wide mode) button (20)
24 ←/↑/↓/→/ENTER button (22)
25 ZOOM +/– buttons (33)
26 ←• (instant replay)/ •→ (instant advance) buttons (56)

→continued

27 MENU button (54)
28 ◀◀◄❚/❚►▶▶ (search) buttons (56)
29 ▷ (play) button (54)
The button has a tactile dot*.
❚❚ (pause) button (56)
■ (stop) button (54)
30 CHAPTER MARK/ERASE buttons (68)
31 INPUT SELECT button (52, 77)
32 SUR (surround) button (56)
33 COMMAND MODE switch (DVD 1,2,3) (21)

* Use the tactile dot as a reference when operating the recorder.

Front panel display

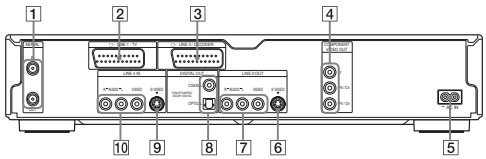


1 HDD/DVD indicators
Displays the selected media and the playing/recording/dubbing status.
2 Disc type*/recording format
3 (angle) indicator (56)
4 PLAYLIST indicator (34)
5 Audio signal indicators (38)
6 STEREO/BILINGUAL indicators (41)
7 NICAM indicator (41)
8 TV indicator (48)
9 Displays the following (39):
• Playing time/remaining time
• Current title/chapter/track/index number
• Recording time/recording mode
• Clock
• Programme position
• TV Direct Rec indication (48): "TV" appears in the right most two digits.
10 SMARTLINK indicator (15)
11 PROGRESSIVE indicator (16)

* Displays DATA CDs as "CD."

Hint
You can turn off the front panel display when the recorder is turned off by setting "Dimmer" to "Power Save" in Options Setup (page 97).

Rear panel



1 AERIAL IN/OUT jacks (13)
2 LINE 1 – TV jack (14)
3 LINE 3/DECODER jack (26)
4 COMPONENT VIDEO OUT (Y, PB/CB, PR/CR) jacks (14)
5 AC IN terminal (19)
6 LINE 2 OUT (S VIDEO) jack (14)
7 LINE 2 OUT (AUDIO L/R/VIDEO) jacks (14, 17)
8 DIGITAL OUT (COAXIAL/OPTICAL) jacks (17)
9 LINE 4 IN (S VIDEO) jack (27)
10 LINE 4 IN (AUDIO L/R/VIDEO) jacks (27)

Glossary

Chapter (page 61)
Sections of a picture or a music feature that are smaller than titles. A title is composed of several chapters. Depending on the disc, no chapters may be recorded.

Copy protection signals (page 42)
Copy restriction set by copyright owners, etc. These signals are included in some software or TV programmes and restrict recording on this recorder.

Dolby Digital (page 92)
Digital audio compression technology developed by Dolby Laboratories. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. Dolby Digital provides the same discrete channels of high quality digital audio found in "Dolby Digital" theater surround sound systems.
Good channel separation is realized because all of the channel data is recorded discretely, and little deterioration occurs because all channel data processing is digital.

DTS (page 92)
Digital audio compression technology by Digital Theater Systems, Inc. This technology conforms to multi-channel surround sound. The rear channel is stereo and there is a discrete subwoofer channel in this format. DTS provides the same discrete channels of high quality digital audio.
Good channel separation is realized because all of the channel data is recorded discretely, and little deterioration occurs because all channel data processing is digital.

DVD+R (page 8)
A DVD+R (read "plus R") is a recordable disc that is the same size as a DVD VIDEO. Contents can be recorded only once to a DVD+R, and will have the same format as a DVD VIDEO.

DVD+RW (page 8)
A DVD+RW (read "plus RW") is a recordable and rewritable disc. DVD+RWs use a recording format that is comparable to the DVD VIDEO format.

DVD-R (page 8)
A DVD-R is a recordable disc that is the same size as a DVD VIDEO. Contents can be recorded only once to a DVD-R, and will have the same format as a DVD VIDEO.

DVD-RW (page 8)
A DVD-RW is a recordable and rewritable disc that is the same size as a DVD VIDEO. The DVD-RW has two different modes: VR mode and Video mode. DVDs created in Video mode have the same format as a DVD VIDEO, while discs created in VR (Video Recording) mode allow the contents to be programmed or edited.

DVD VIDEO (page 8)
A disc that contains up to eight hours of moving pictures on a disc the same diameter as a CD. The data capacity of a single-layer and single-sided DVD is 4.7 GB (Giga Byte), which is 7 times that of a CD. The data capacity of a double-layer and single-sided DVD is 8.5 GB, a single-layer and double-sided DVD is 9.4 GB, and double-layer and double-sided DVD is 17 GB. The picture data uses the MPEG 2 format, which is a worldwide standard of digital compression technology. The picture data is compressed to about 1/40 (average) of its original size. The DVD also uses a variable rate coding technology that changes the data to be allocated according to the status of the picture. Audio information is recorded in a multi-channel format, such as Dolby Digital, allowing you to enjoy a more real audio presence.
Furthermore, various advanced functions such as the multi-angle, multilingual, and Parental Control functions are provided on the DVD.

Hard disk drive (page 3)
A hard disk drive is a whole mechanical system that consists of disks and drive. Disks are flat, circular, rigid plates coated with a thin magnetic media. Magnetic heads record data on the rapidly spinning disks, and this enables the speedy and efficient reading and writing of data.

Interlace format (page 16)
Interlace format shows every other line of an image as a single "field" and is the standard method for displaying images on television. The even number field shows the even numbered lines of an image, and the odd numbered field shows the odd numbered lines of an image.

MPEG Audio (page 92)
International standard coding system used to compress audio digital signals authorized by ISO/IEC. MPEG 2, used on DVDs, conforms to up to 7.1-channel surround.

Original (page 64)
Titles actually recorded on a DVD-RW (VR mode). Erasing original titles frees up disc space.

Playlist (page 64)
Playback information created from the actual recordings on a DVD-RW (VR mode). A Playlist leaves the original titles as they are, and contains only the information needed to control playback. A Playlist title takes up very little disc space.

Progressive format (page 16)
Compared to the Interlace format that alternately shows every other line of an image (field) to create one frame, the Progressive format shows the entire image at once as a single frame. This means that while the Interlace format can show 30 frames/60 fields in one second, the Progressive format can show 60 frames in one second. The overall picture quality increases and still images, text, and horizontal lines appear sharper.

Title (page 61)
The longest section of a picture or music feature on a DVD, movie, etc., in video software, or the entire album in audio software.

Track (page 61)
Sections of a music feature on a CD (the length of a song).

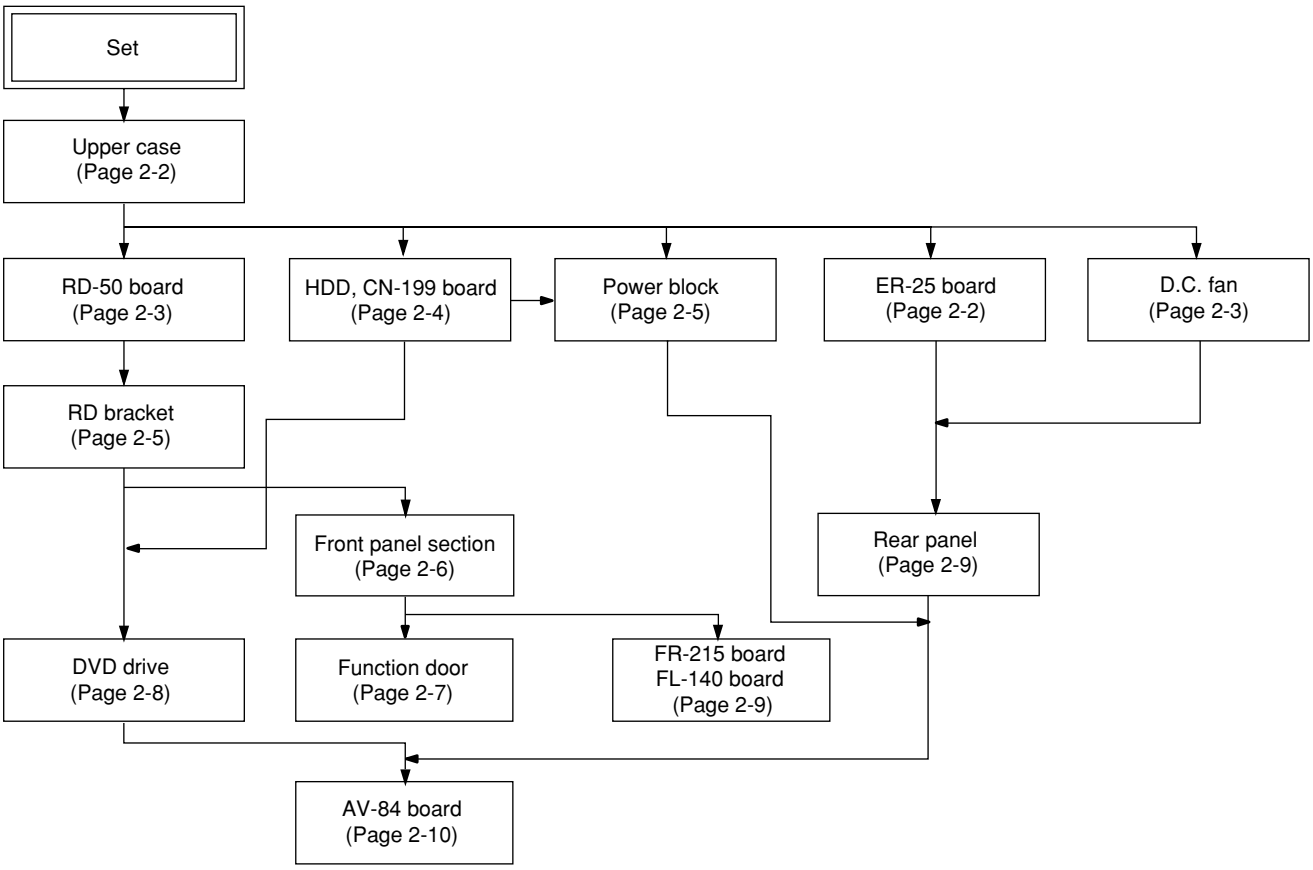
Language Code List

For details, see page 88.
The language spellings conform to the ISO 639: 1988 (E/F) standard.

Code	Language	Code	Language	Code	Language	Code	Language
1027	Afar	1183	Irish	1347	Maori	1507	Samoan
1028	Abkhazian	1186	Scots Gaelic	1349	Macedonian	1508	Shona
1032	Afrikaans	1194	Galician	1350	Malayalam	1509	Somali
1039	Amharic	1196	Guarani	1352	Mongolian	1511	Albanian
1044	Arabic	1203	Gujarati	1353	Moldavian	1512	Serbian
1045	Assamese	1209	Hausa	1356	Marathi	1513	Siswati
1051	Aymara	1217	Hindi	1357	Malay	1514	Sesotho
1052	Azerbaijani	1226	Croatian	1358	Maltese	1515	Sundanese
1053	Bashkir	1229	Hungarian	1363	Burmese	1516	Swedish
1057	Byelorussian	1233	Armenian	1365	Nauru	1517	Swahili
1059	Bulgarian	1235	Interlingua	1369	Nepali	1521	Tamil
1060	Bihari	1239	Interlingue	1376	Dutch	1525	Telugu
1061	Bislama	1245	Inupiak	1379	Norwegian	1527	Tajik
1066	Bengali; Bangla	1248	Indonesian	1393	Occitan	1528	Thai
		1253	Icelandic	1403	(Afan)Oromo	1529	Tigrinya
1067	Tibetan	1254	Italian	1408	Oriya	1531	Turkmen
1070	Breton	1257	Hebrew	1417	Punjabi	1532	Tagalog
1079	Catalan	1261	Japanese	1428	Polish	1534	Setswana
1093	Corsican	1269	Yiddish	1435	Pashto; Pushto	1535	Tonga
1097	Czech	1283	Javanese			1538	Turkish
1103	Welsh	1287	Georgian	1436	Portuguese	1539	Tsonga
1105	Danish	1297	Kazakh	1463	Quechua	1540	Tatar
1109	German	1298	Greenlandic	1481	Rhaeto-Romance	1543	Twi
1130	Bhutani	1299	Cambodian			1557	Ukrainian
1142	Greek	1300	Kannada	1482	Kirundi	1564	Urdu
1144	English	1301	Korean	1483	Romanian	1572	Uzbek
1145	Esperanto	1305	Kashmiri	1489	Russian	1581	Vietnamese
1149	Spanish	1307	Kurdish	1491	Kinyarwanda	1587	Volapük
1150	Estonian	1311	Kirghiz	1495	Sanskrit	1613	Wolof
1151	Basque	1313	Latin	1498	Sindhi	1632	Xhosa
1157	Persian	1326	Lingala	1501	Sangho	1665	Yoruba
1165	Finnish	1327	Laothian	1502	Serbo-Croatian	1684	Chinese
1166	Fiji	1332	Lithuanian			1697	Zulu
1171	Faroese	1334	Latvian; Lettish	1503	Singhalese		
1174	French			1505	Slovak		
1181	Frisian	1345	Malagasy	1506	Slovenian	1703	Not specified

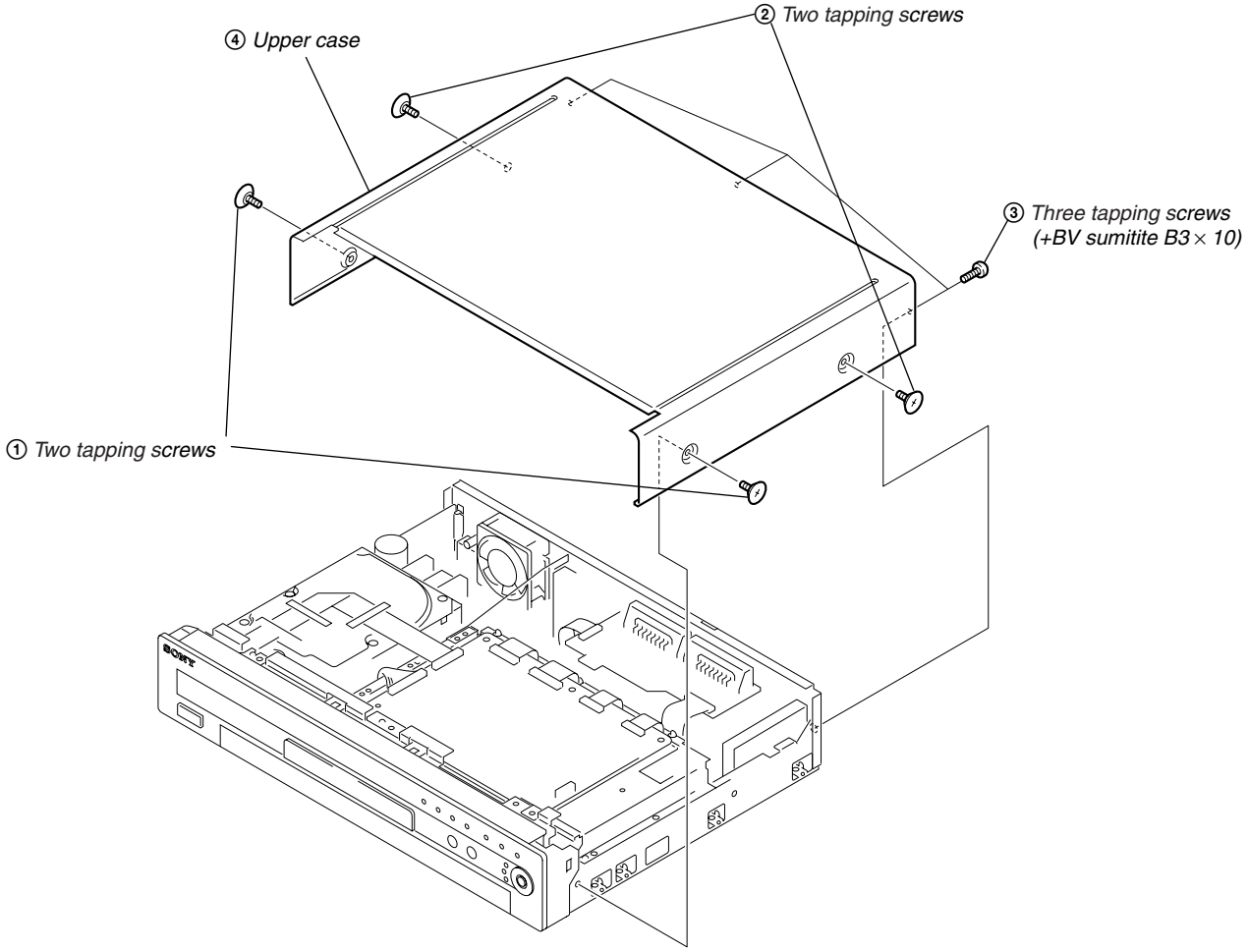
SECTION 2
DISASSEMBLY

NOTE: The following flow chart shows the disassembly procedure.

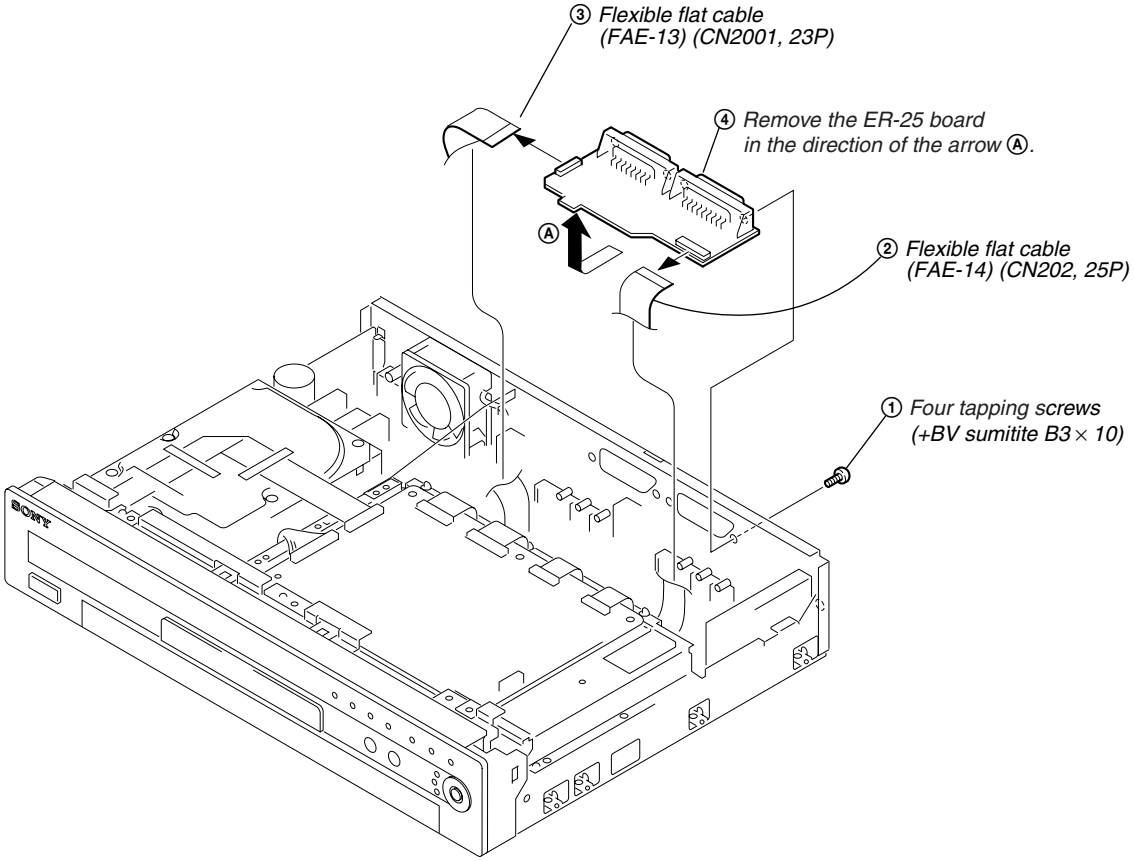


NOTE: Follow the disassembly procedure in the numerical order given.

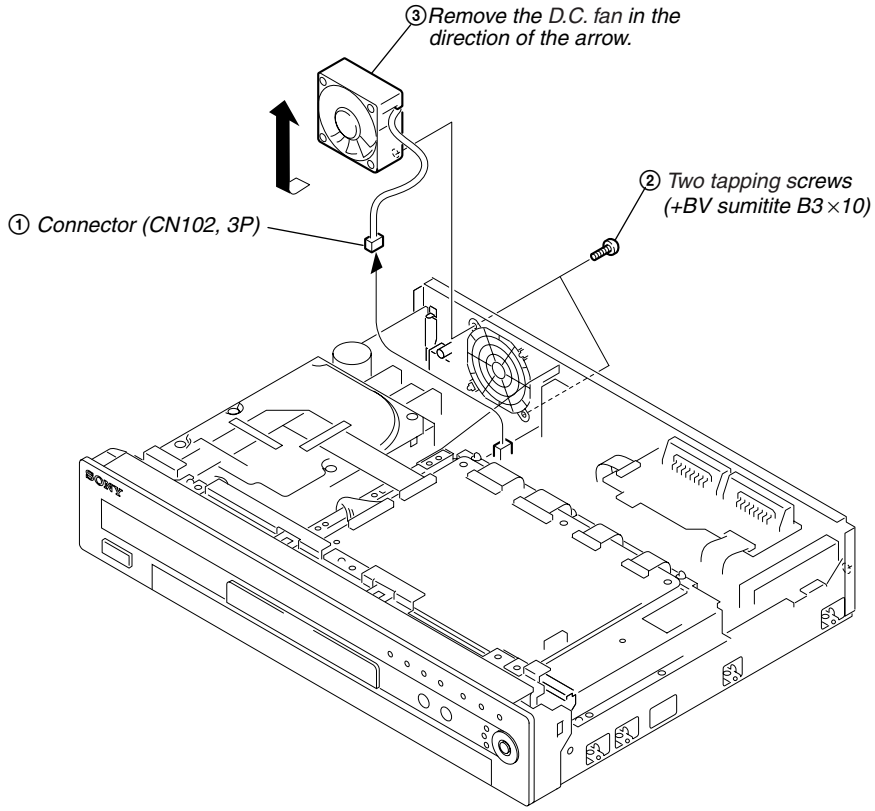
2-1. UPPER CASE



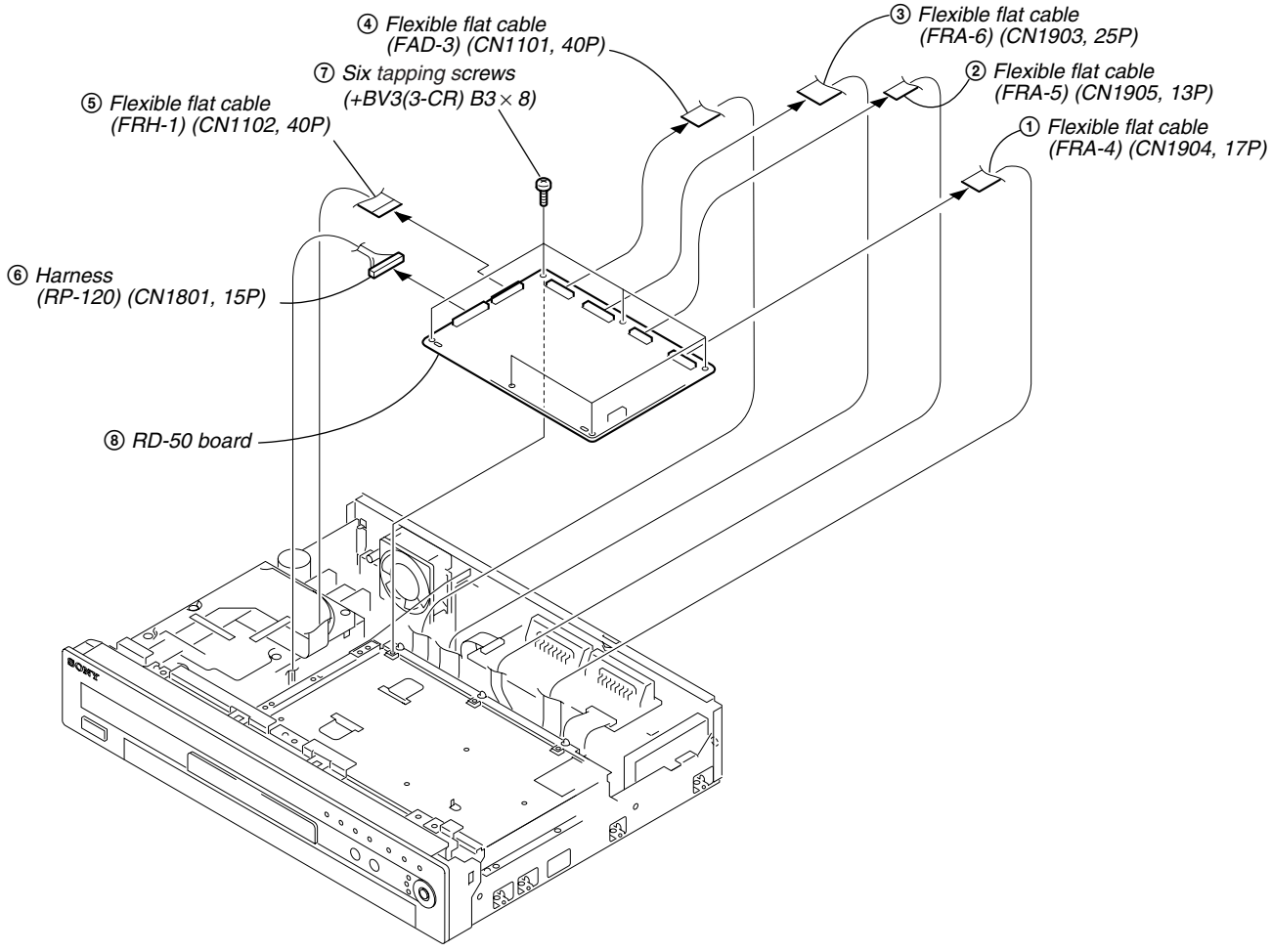
2-2. ER-25 BOARD


③ Flexible flat cable
(FAE-13) (CN2001, 23P)
④ Remove the ER-25 board
in the direction of the arrow Ⓐ.
Ⓐ
② Flexible flat cable
(FAE-14) (CN202, 25P)
① Four tapping screws
(+BV sumitite B3 × 10)

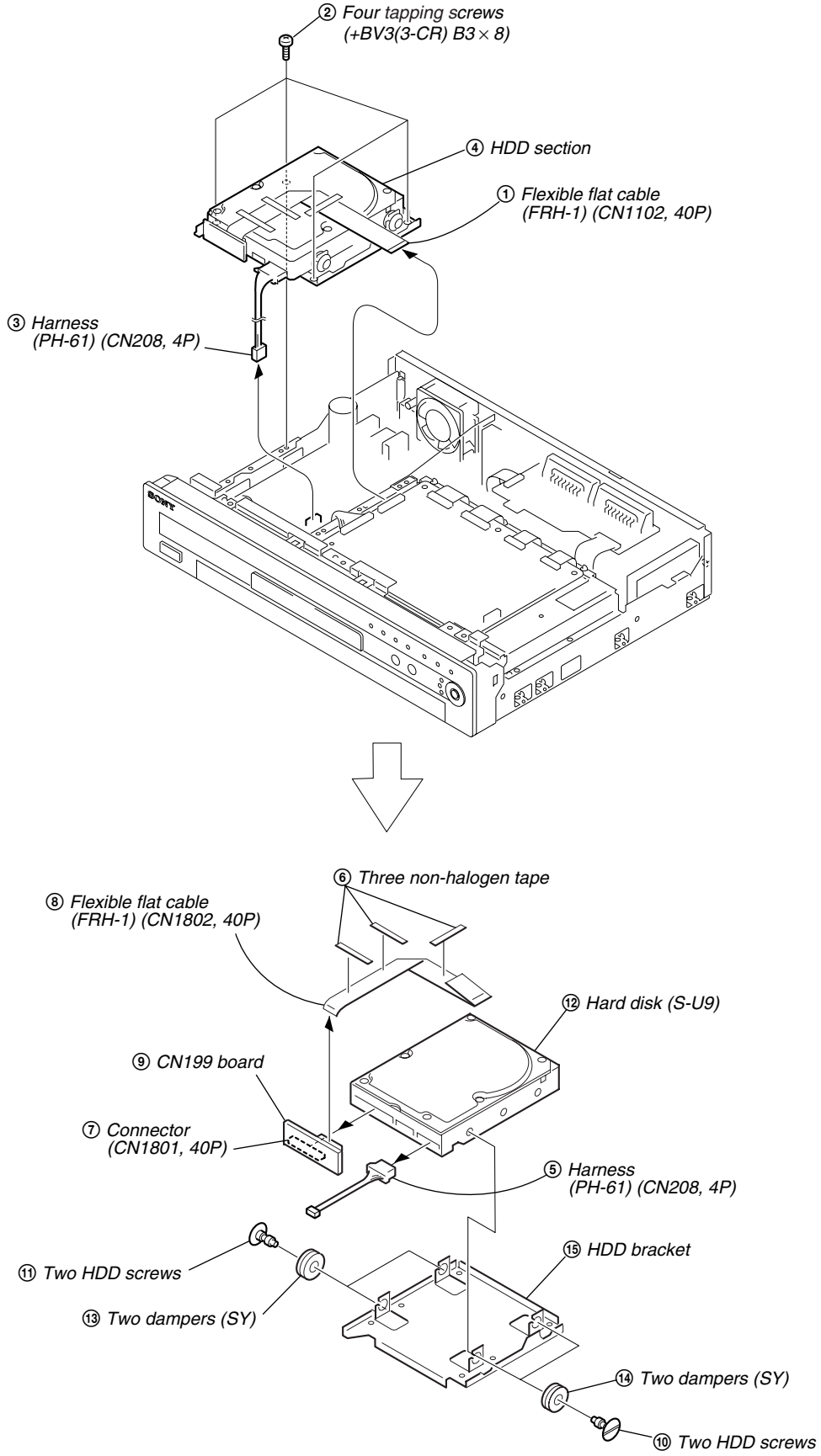
2-3. D.C. FAN



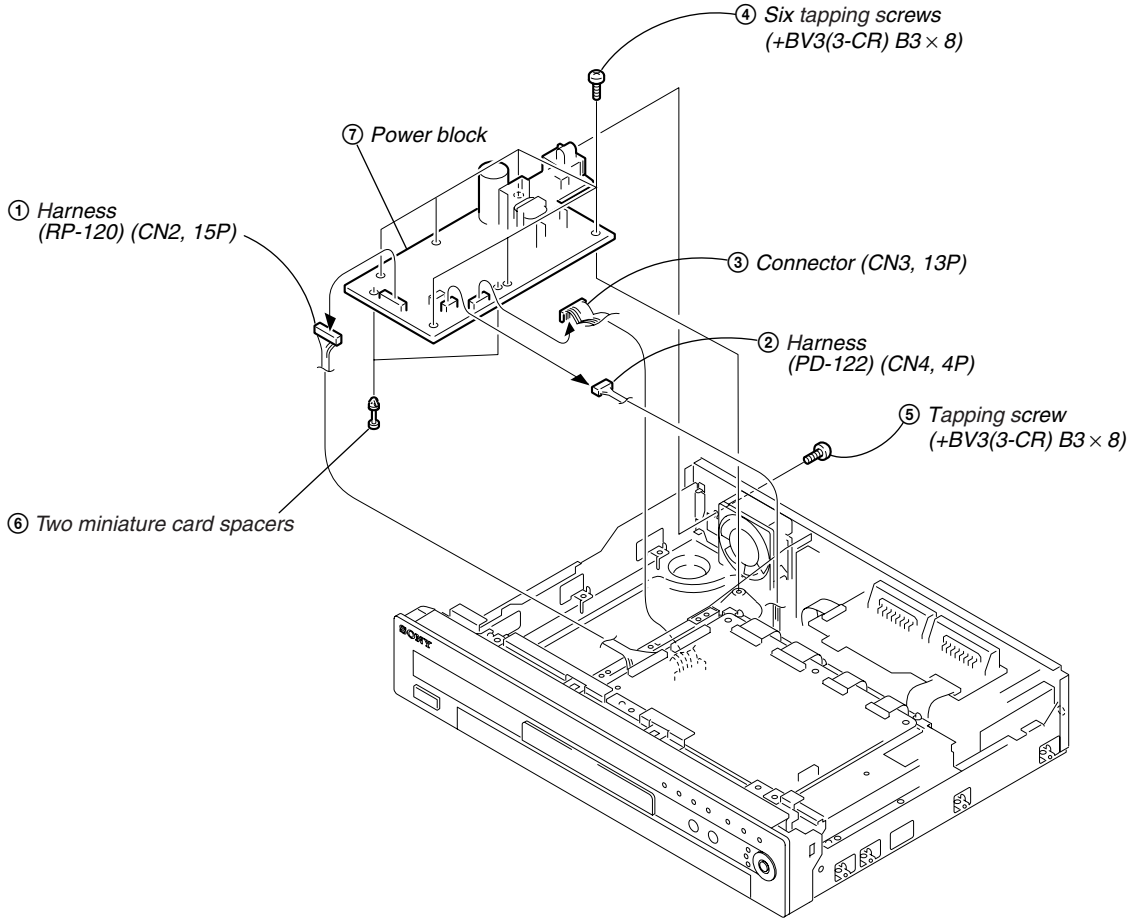
2-4. RD-50 BOARD


④ Flexible flat cable (FAD-3) (CN1101, 40P)
③ Flexible flat cable (FRA-6) (CN1903, 25P)
⑦ Six tapping screws (+BV3(3-CR) B3× 8)
② Flexible flat cable (FRA-5) (CN1905, 13P)
⑤ Flexible flat cable (FRH-1) (CN1102, 40P)
① Flexible flat cable (FRA-4) (CN1904, 17P)
⑥ Harness (RP-120) (CN1801, 15P)
⑧ RD-50 board

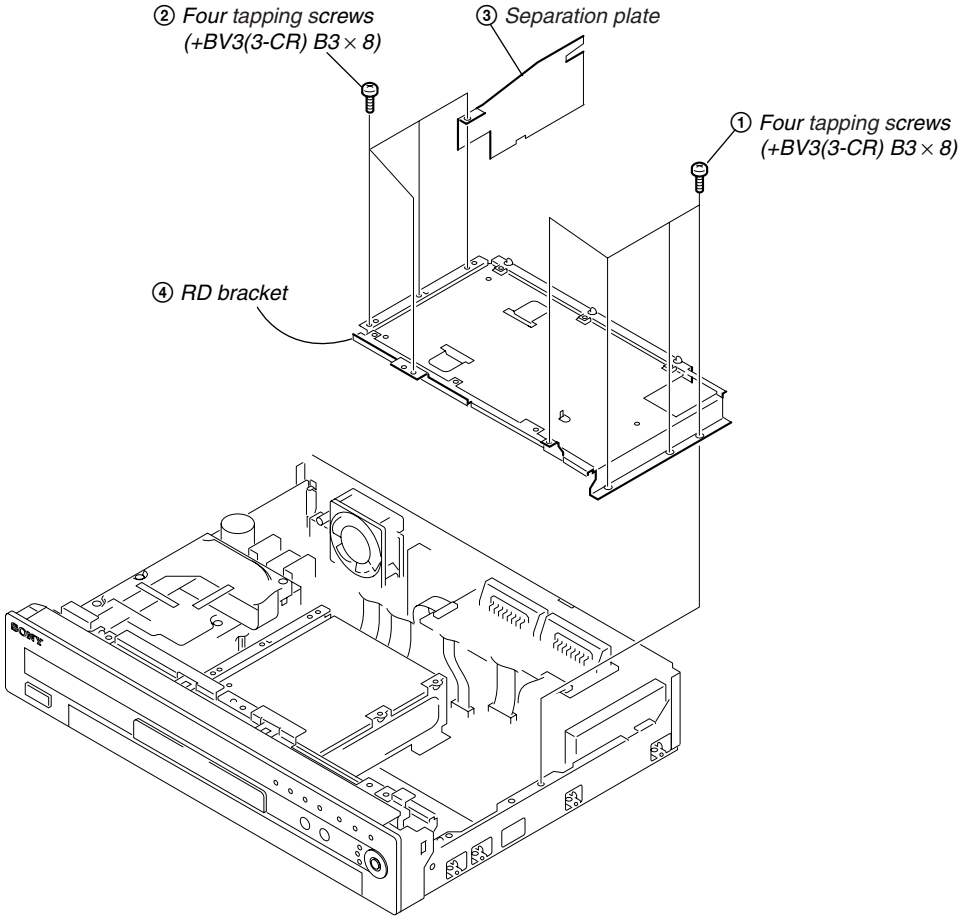
2-5. HDD, CN-199 BOARD



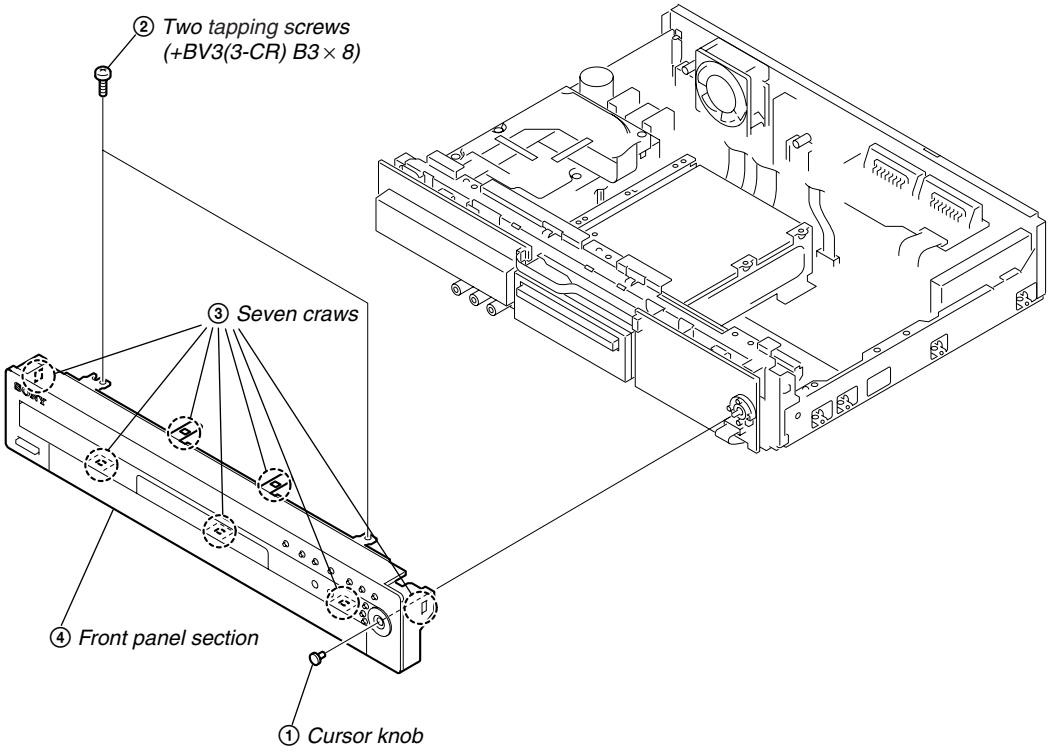
2-6. POWER BLOCK


④ Six tapping screws (+BV3(3-CR) B3 × 8)
⑦ Power block
① Harness (RP-120) (CN2, 15P)
③ Connector (CN3, 13P)
② Harness (PD-122) (CN4, 4P)
⑤ Tapping screw (+BV3(3-CR) B3 × 8)
⑥ Two miniature card spacers

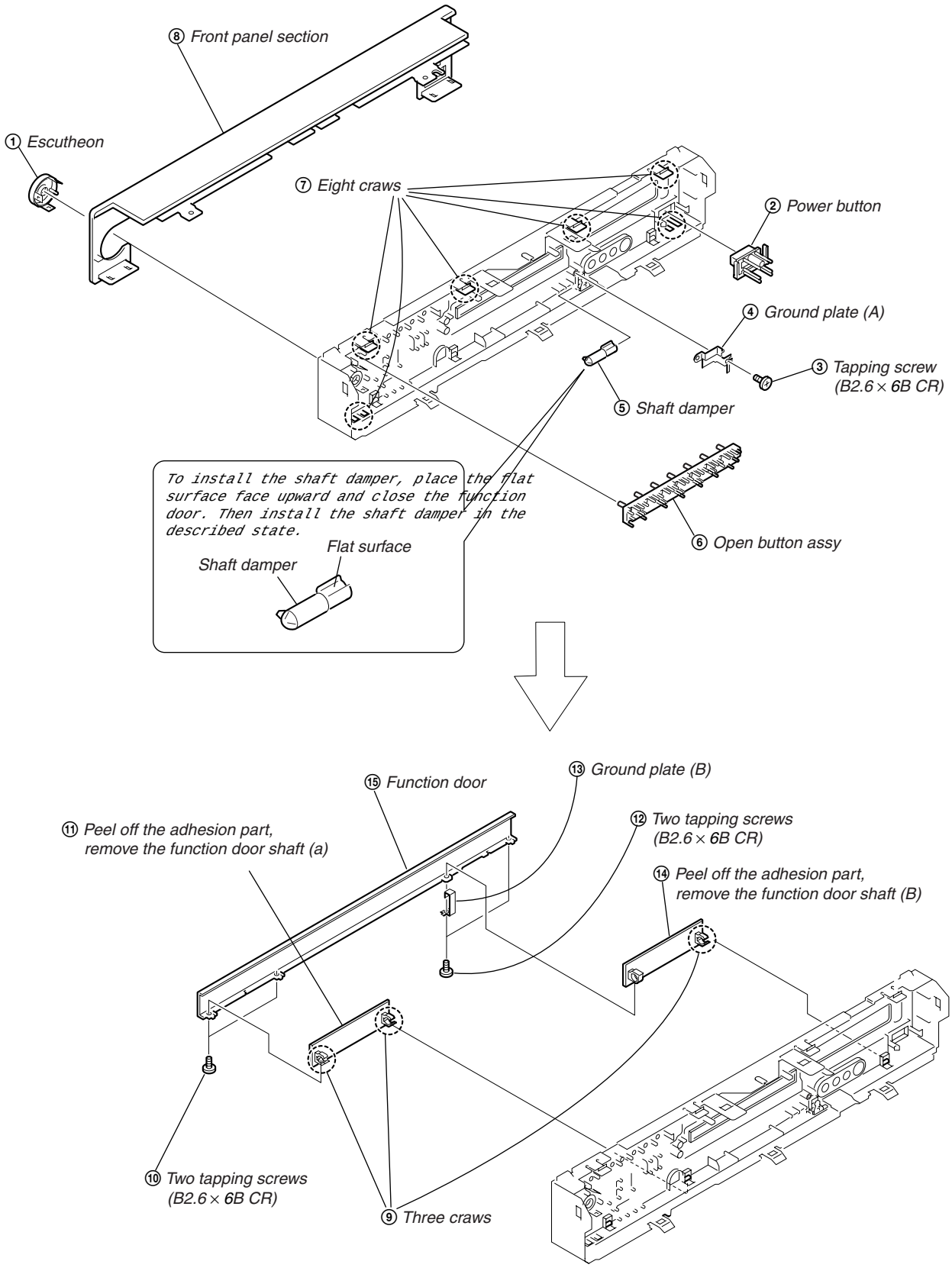
2-7. RD BRACKET



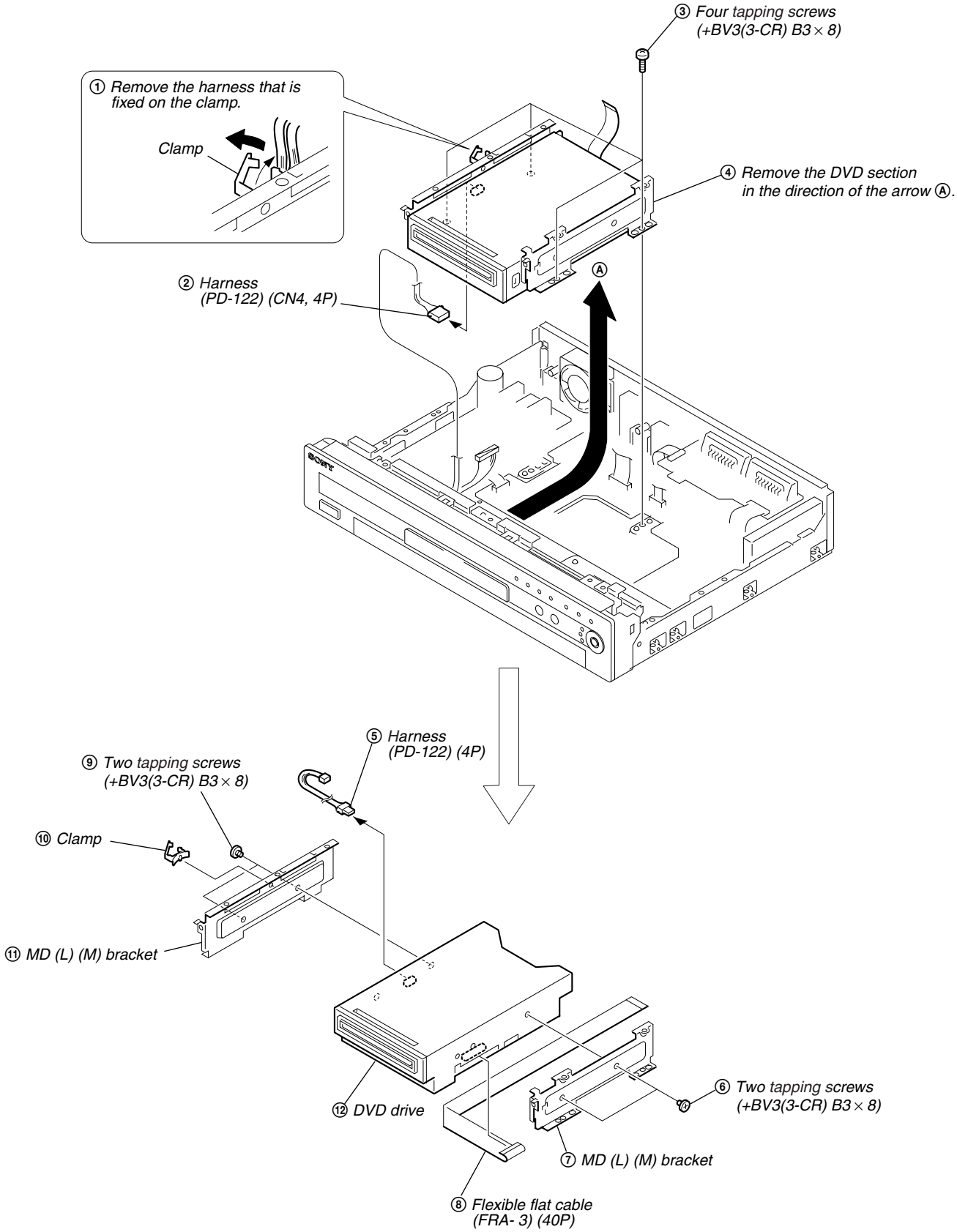
2-8. FRONT PANEL SECTION



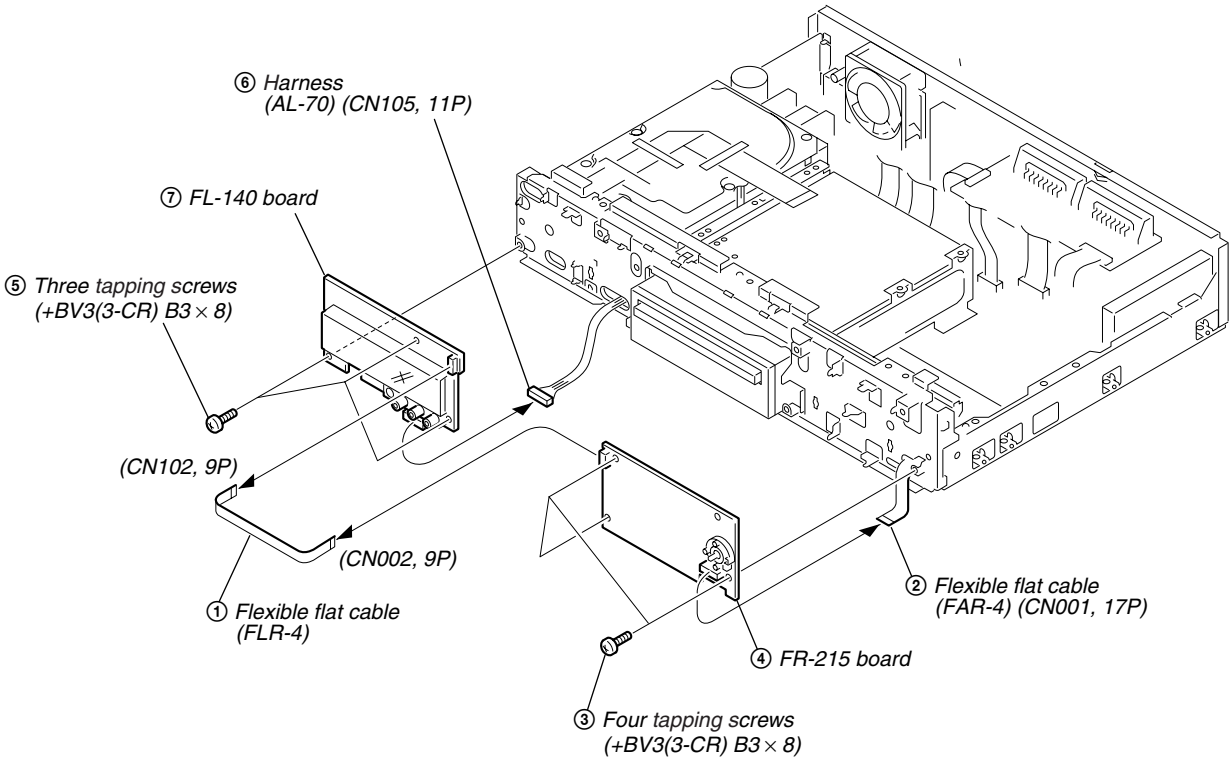
2-9. FUNCTION DOOR


⑧ Front panel section
① Escutheon
⑦ Eight craws
② Power button
④ Ground plate (A)
③ Tapping screw (B2.6 × 6B CR)
⑤ Shaft damper
⑥ Open button assy
To install the shaft damper, place the flat surface face upward and close the function door. Then install the shaft damper in the described state.
Flat surface
Shaft damper
⑮ Function door
⑬ Ground plate (B)
⑪ Peel off the adhesion part, remove the function door shaft (a)
⑫ Two tapping screws (B2.6 × 6B CR)
⑭ Peel off the adhesion part, remove the function door shaft (B)
⑩ Two tapping screws (B2.6 × 6B CR)
⑨ Three craws

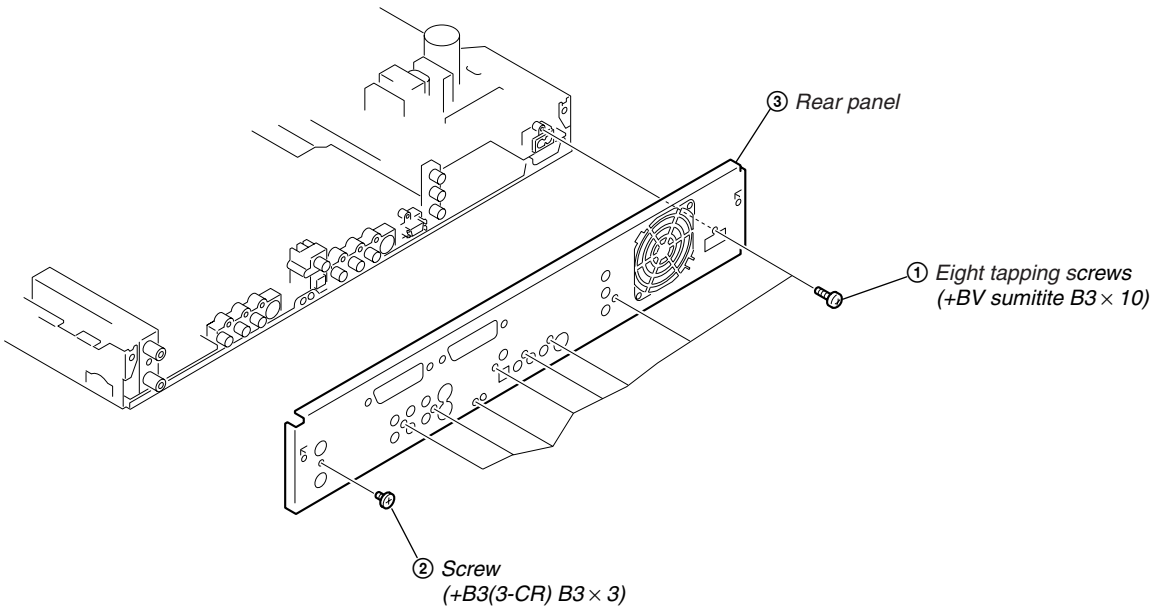
2-10. DVD DRIVE


③ Four tapping screws (+BV3(3-CR) B3 × 8)
① Remove the harness that is fixed on the clamp.
Clamp
④ Remove the DVD section in the direction of the arrow Ⓐ.
② Harness (PD-122) (CN4, 4P)
Ⓐ
⑤ Harness (PD-122) (4P)
⑨ Two tapping screws (+BV3(3-CR) B3 × 8)
⑩ Clamp
⑪ MD (L) (M) bracket
⑫ DVD drive
⑥ Two tapping screws (+BV3(3-CR) B3 × 8)
⑦ MD (L) (M) bracket
⑧ Flexible flat cable (FRA- 3) (40P)

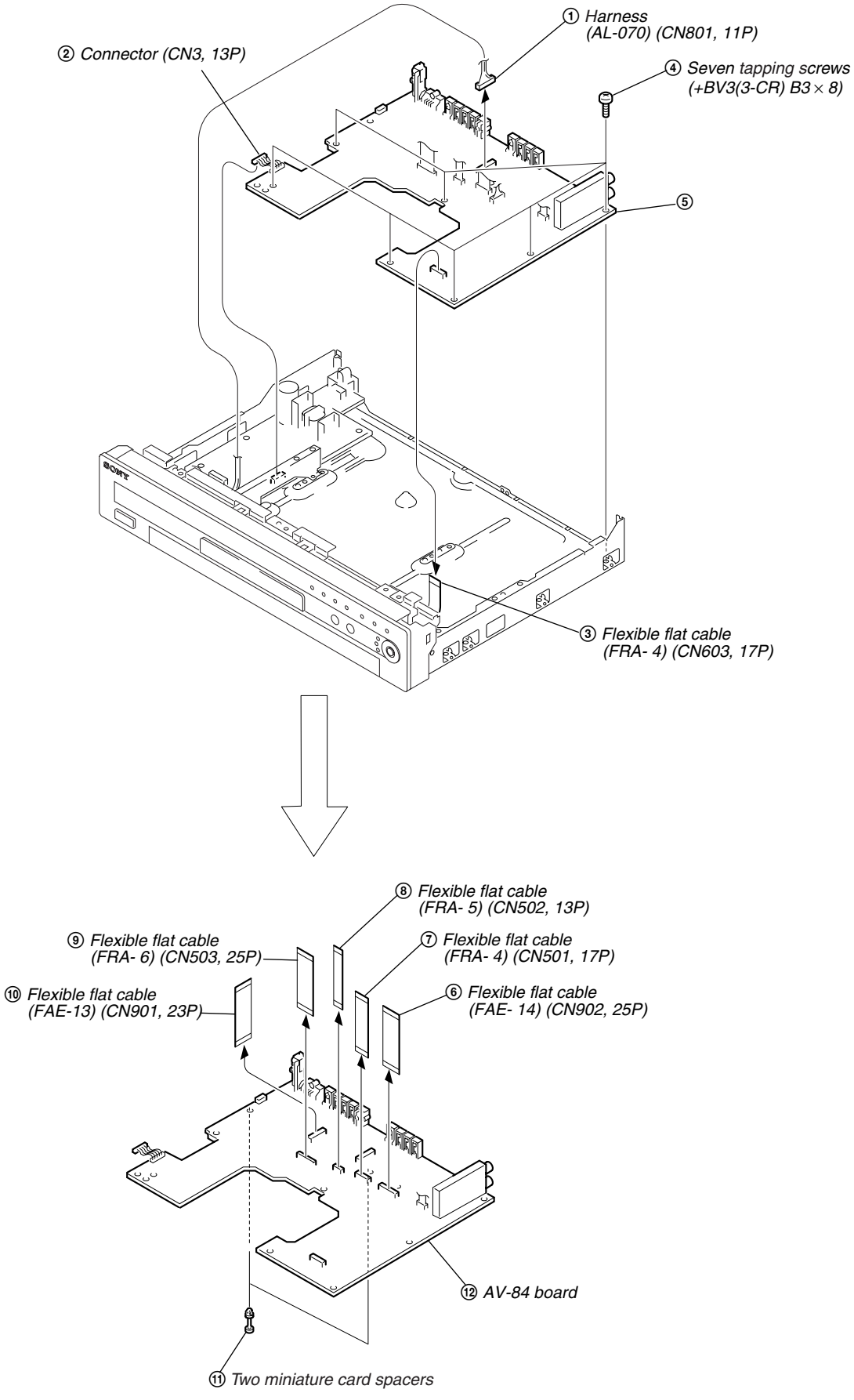
2-11. FR-215 BOARD, FL-140 BOARD



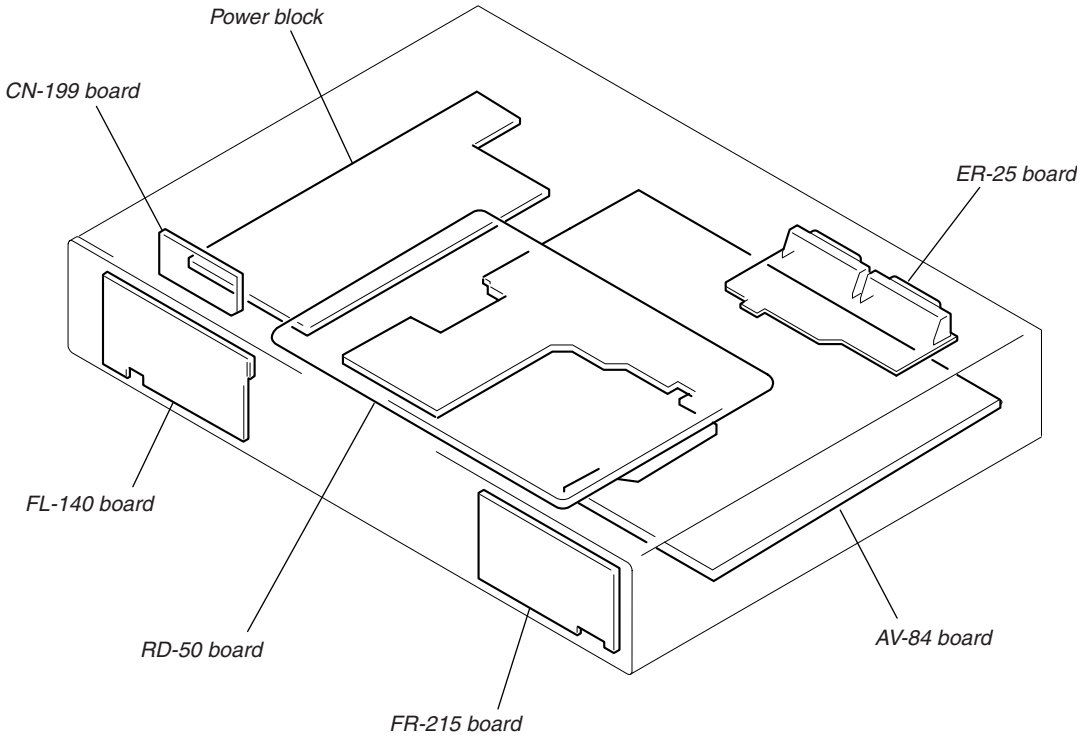
2-12. REAR PANEL



2-13. AV-84 BOARD



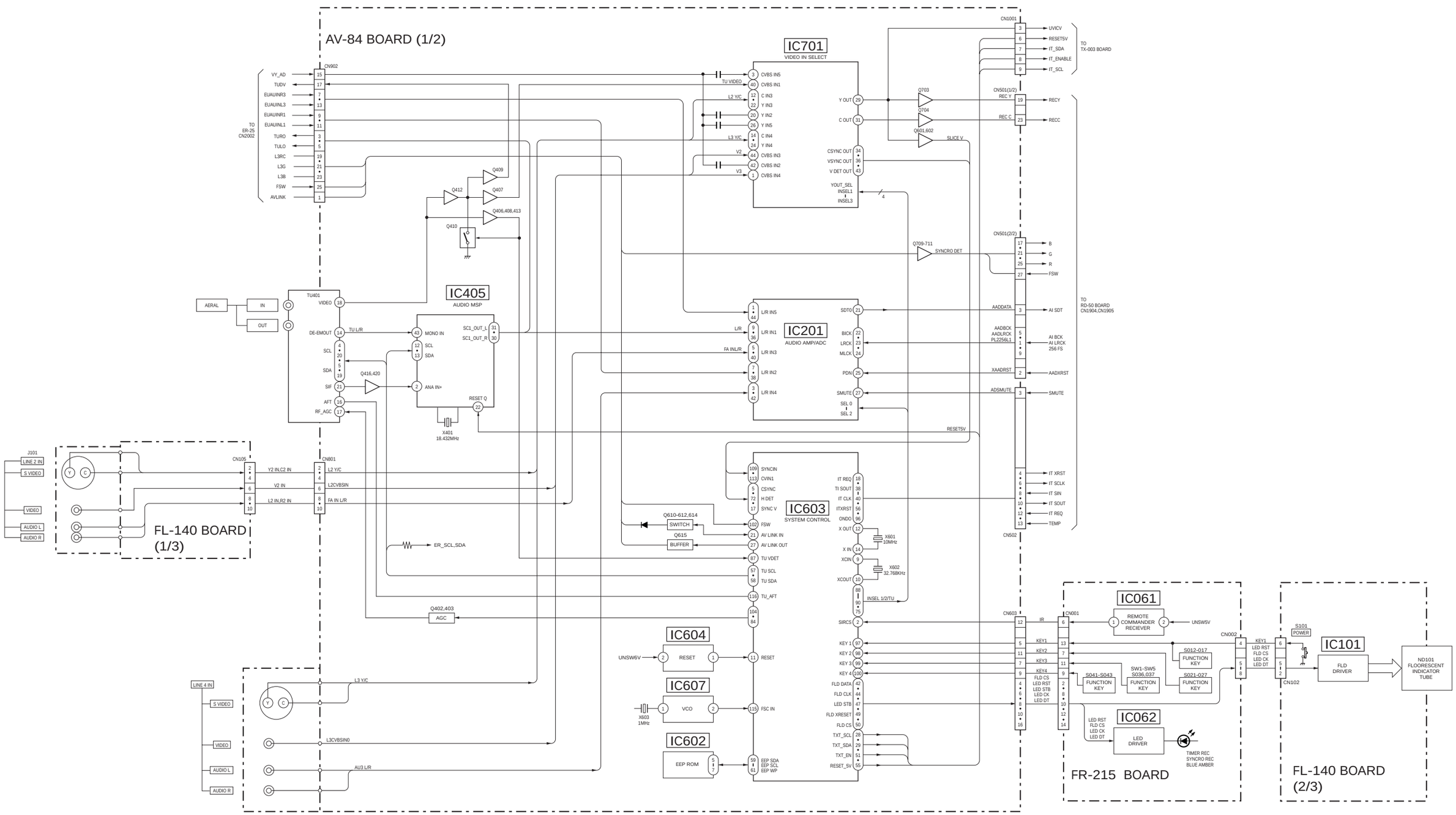
2-14. CIRCUIT BOARDS LOCATION



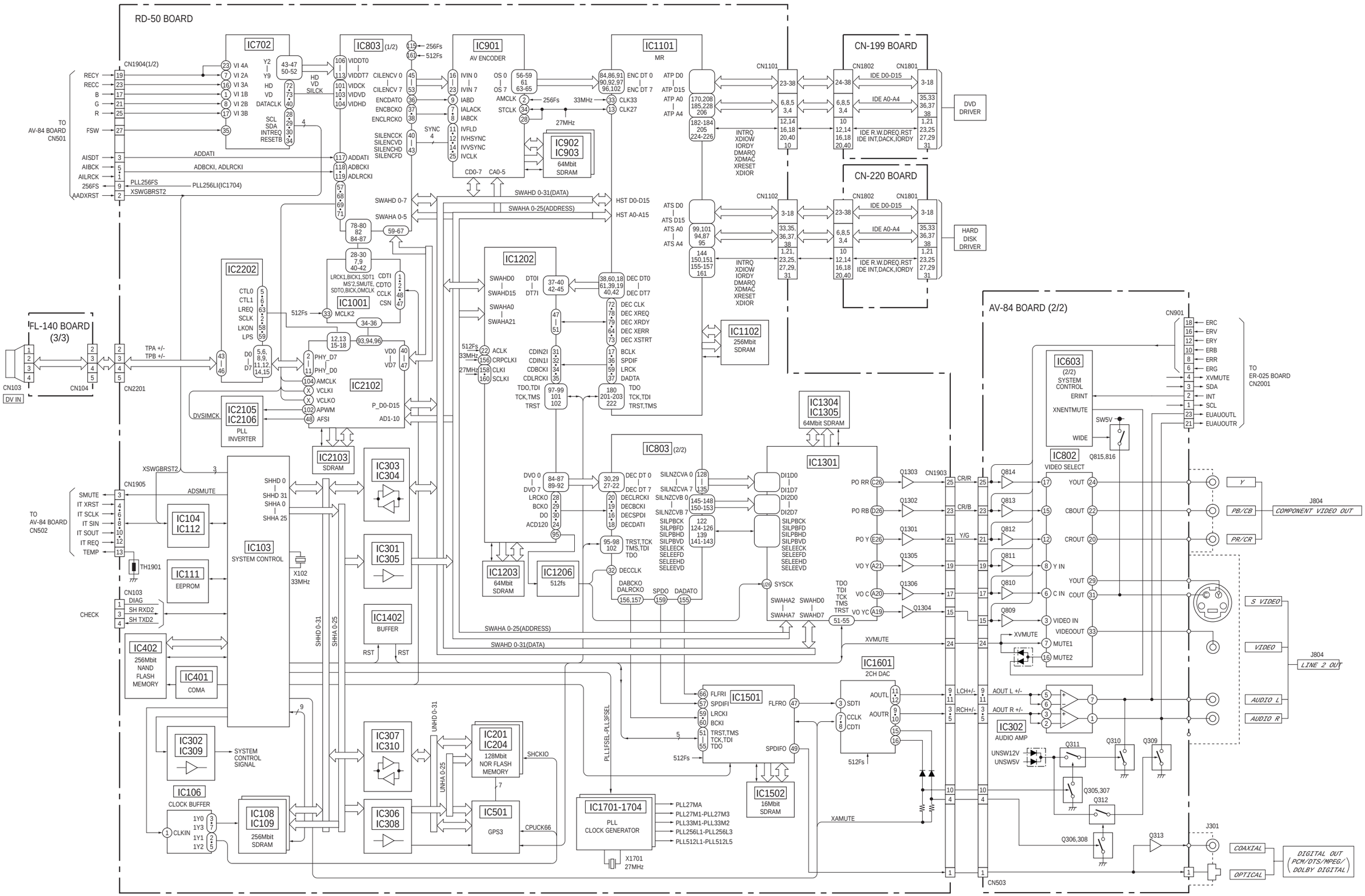
MEMO

SECTION 3
BLOCK DIAGRAMS

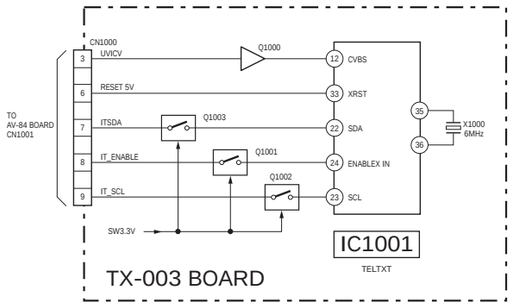
3-1. OVERALL BLOCK DIAGRAM (1/3)

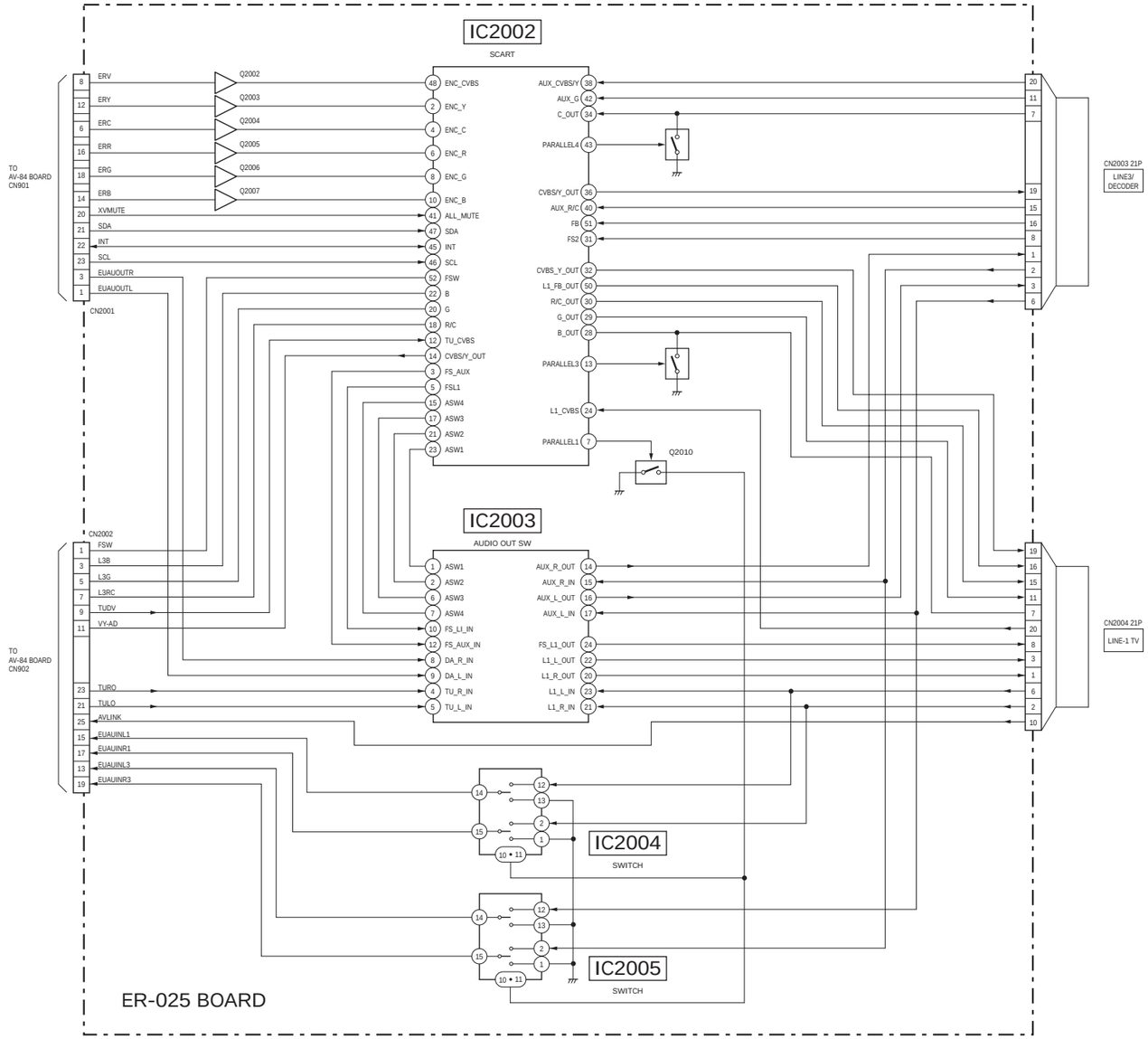


3-2. OVERALL BLOCK DIAGRAM (2/3)

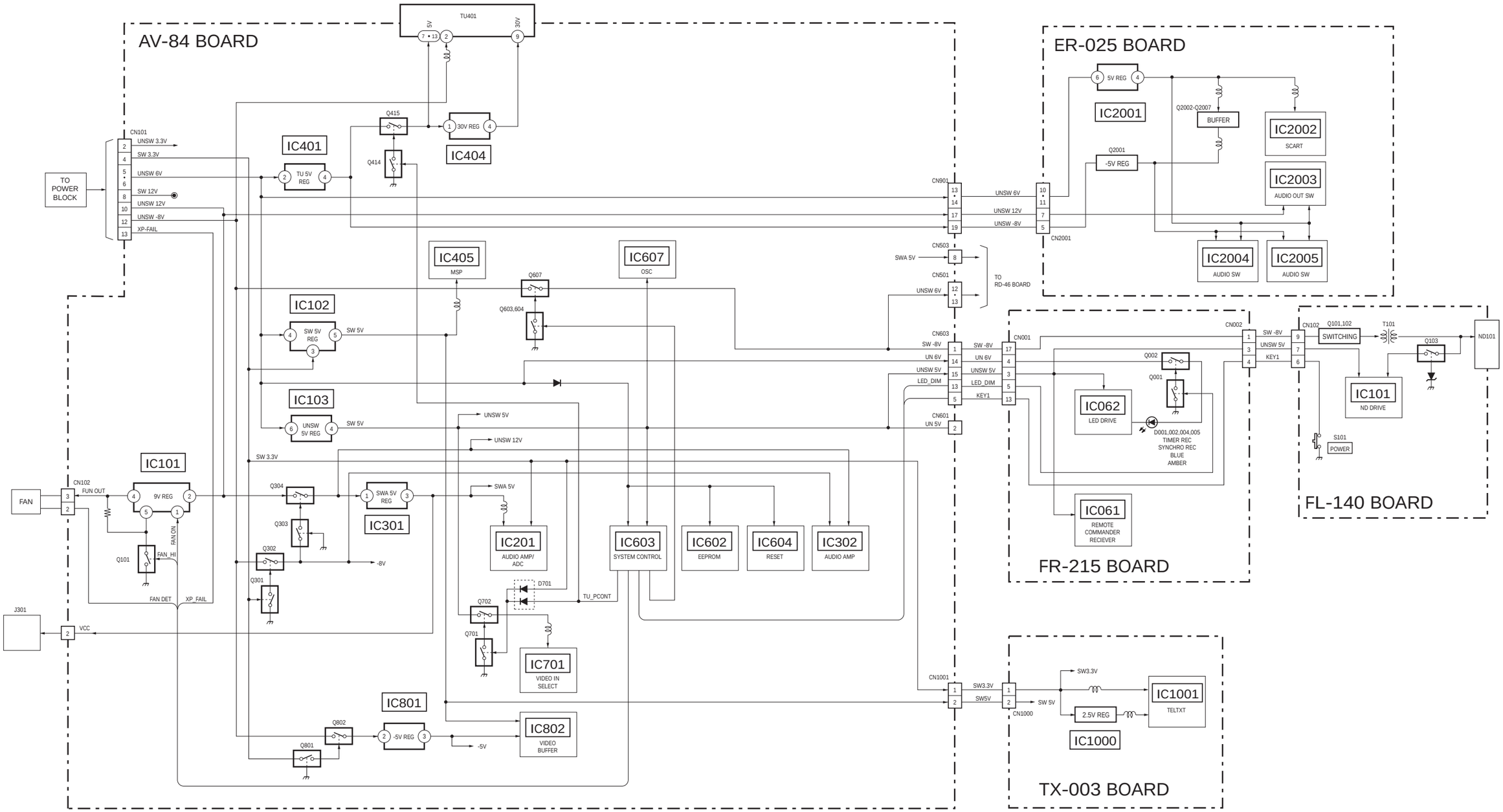


3-3. OVERALL BLOCK DIAGRAM (3/3)

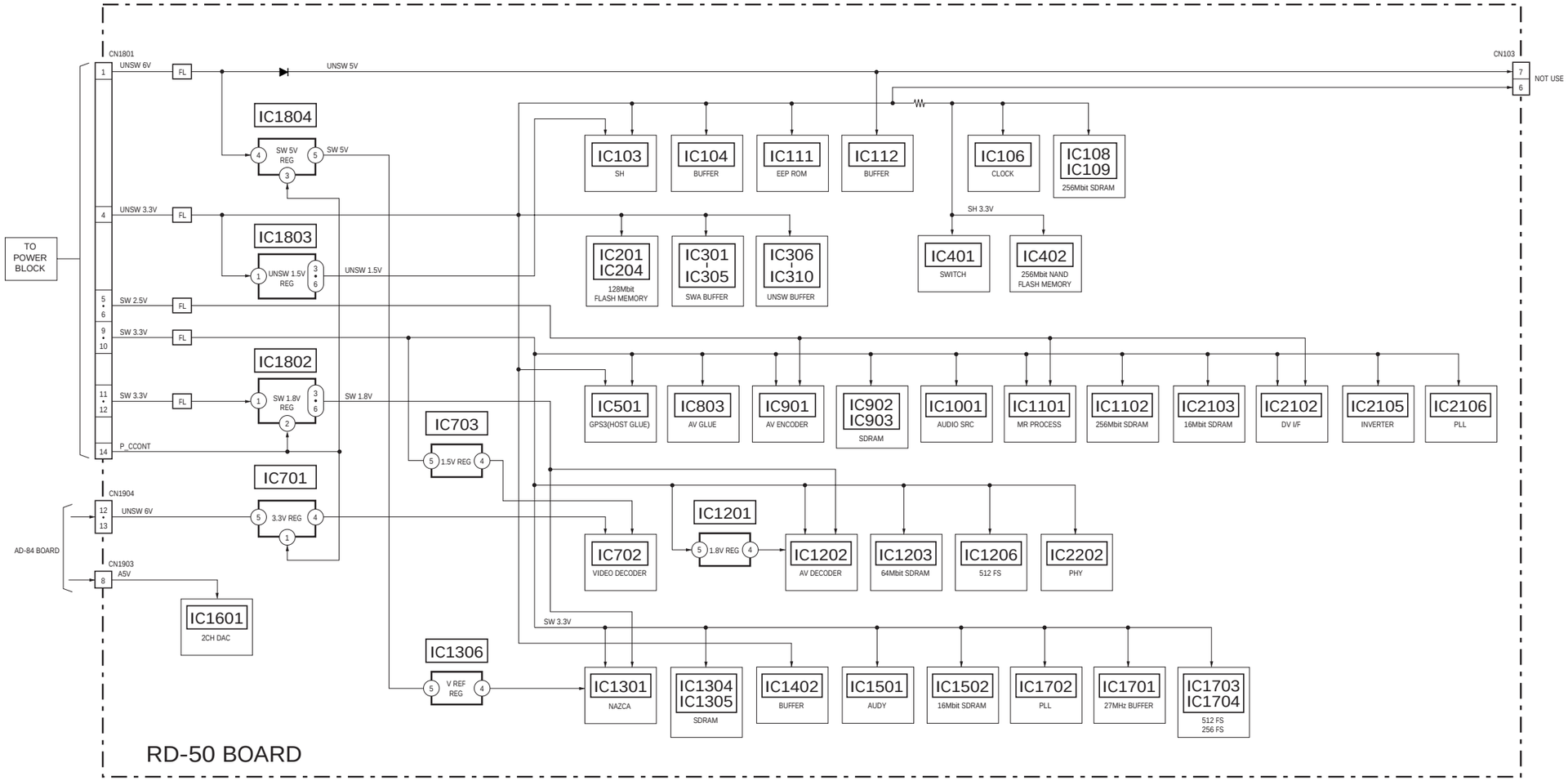




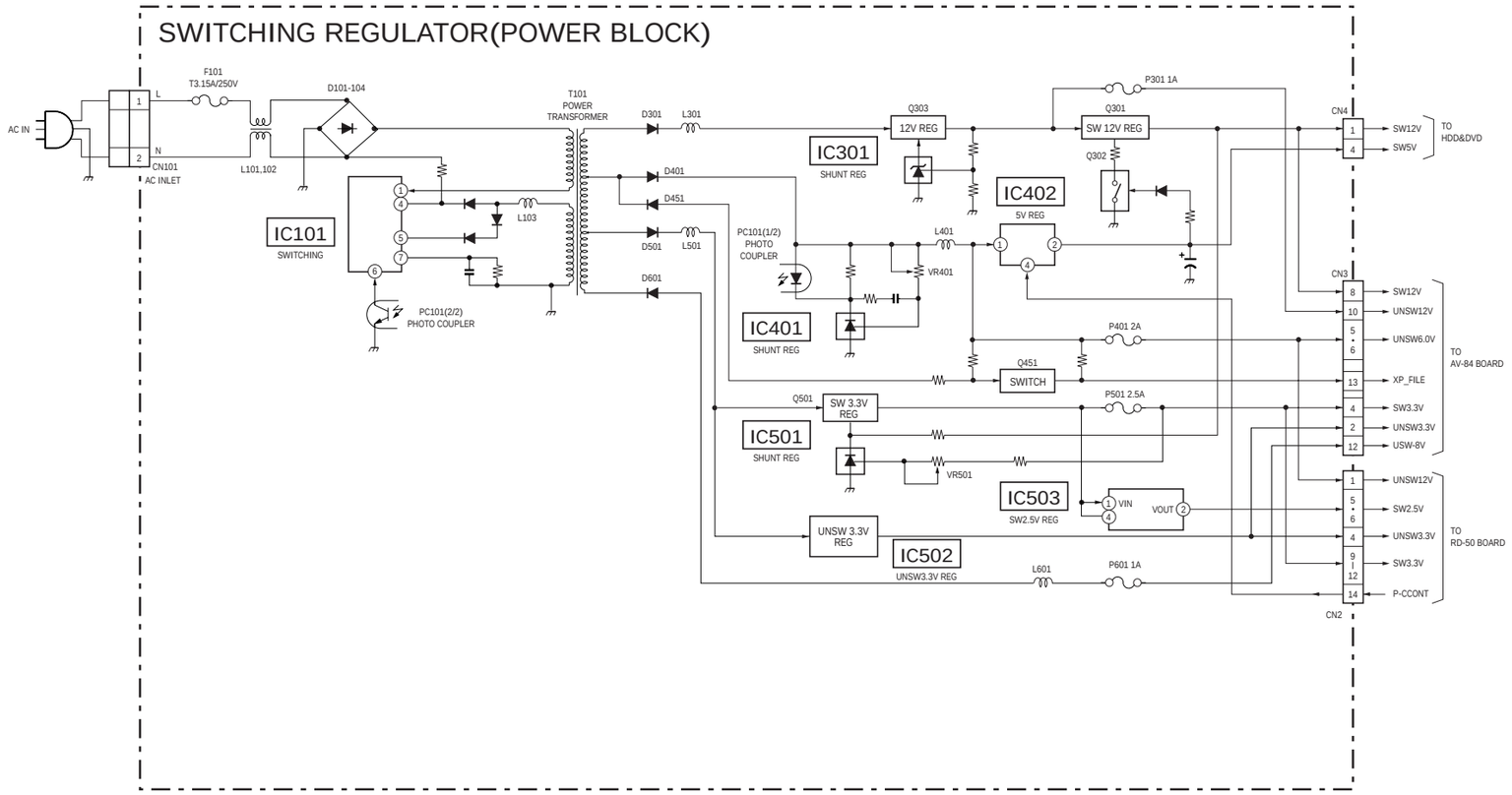
3-4. POWER BLOCK DIAGRAM (1/3)



3-5. POWER BLOCK DIAGRAM (2/3)

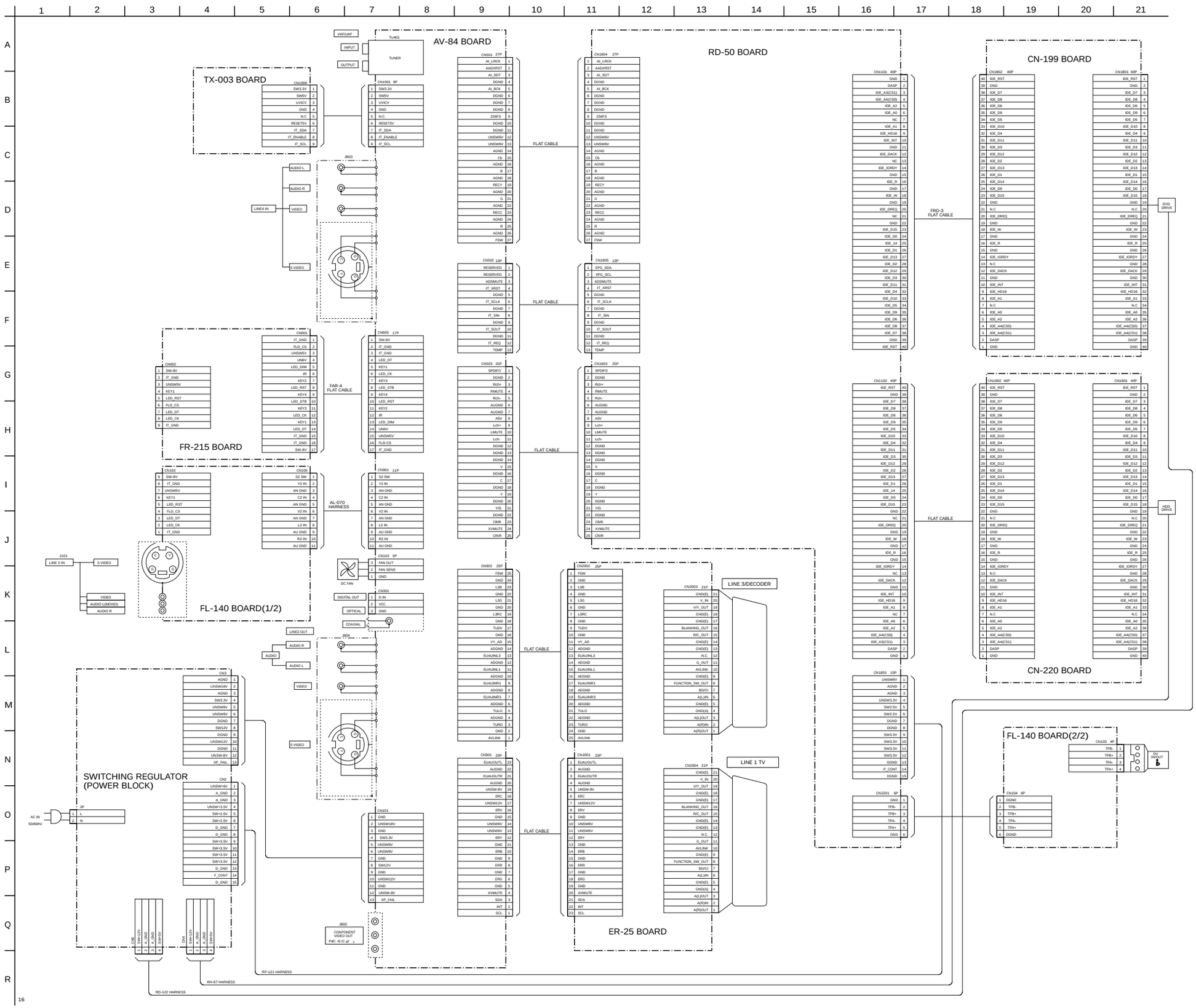


3-6. POWER BLOCK DIAGRAM (3/3)



SECTION 4
SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM



4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

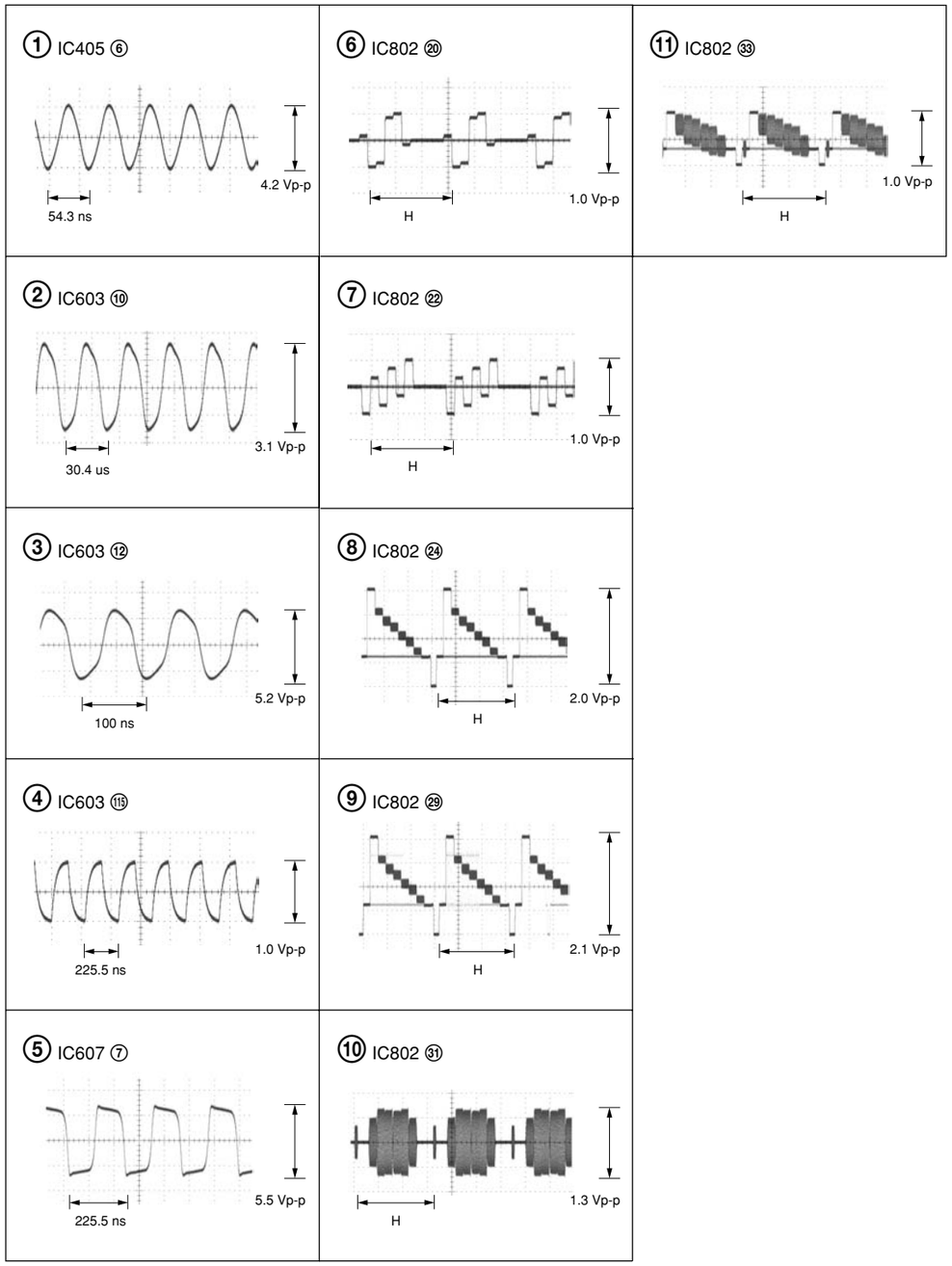
- All capacitors are in μF unless otherwise noted. pF : μμF. 50V or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4 W (Chip resistors : 1 /10 W) un-less otherwise specified.
  kΩ=1000Ω, MΩ=1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : non flammable resistor
- : fusible resistor
- : panel designation
- △ : internal component.
- : adjustment for repair.
- B + : B+ Line
- B − : B– Line
- Circled numbers refer to waveforms.
- Voltages are dc between measurement point.
- Readings are taken with a color-bar signals on DVD reference disc.
- Readings are taken with a digital multimeter (DC 10MW).
- Voltage variations may be noted due to normal production tolerances.

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

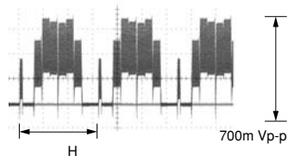
WAVEFORMS

AV-84 BOARD

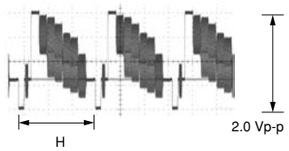


ER-25 BOARD

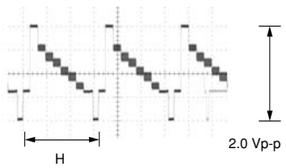
① IC2002 ㉞ (S-VIDEO)



② IC2002 ㊱ (S-VIDEO)

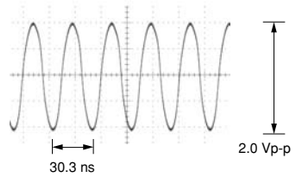


② IC2002 ㊱ (VIDEO)

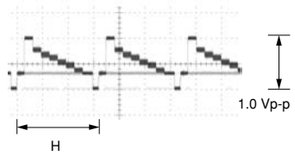


RD-50 BOARD

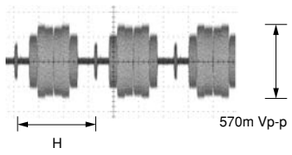
① IC103 Ⓐ2 (JL127)



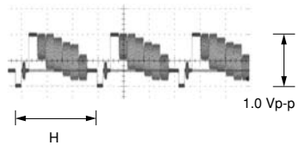
② IC702 ⑦ (S-VIDEO)



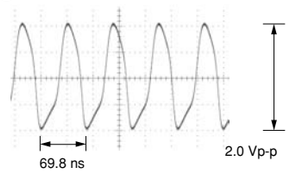
③ IC702 ⑯ (S-VIDEO)



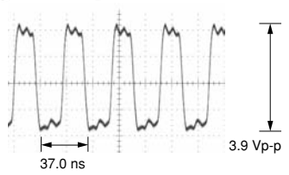
④ IC702 ㉓ (VIDEO)



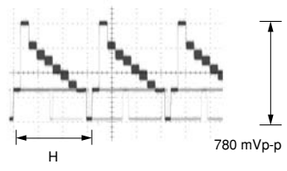
⑤ IC702 ㉕



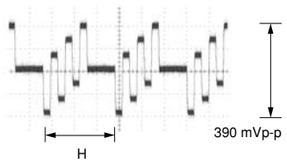
⑥ IC1202 ㊺



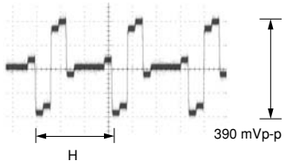
⑦ Q1301 Ⓔ



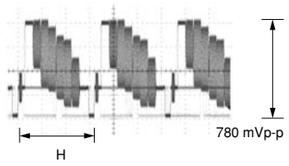
⑧ Q1302 Ⓔ



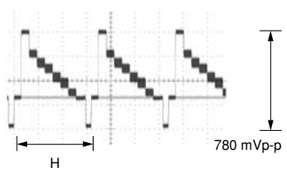
⑨ Q1303 Ⓔ



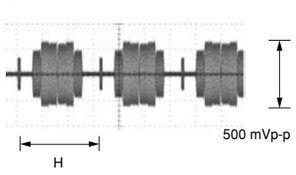
⑩ Q1304 Ⓔ



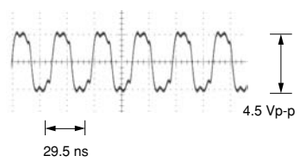
⑪ Q1305 Ⓔ



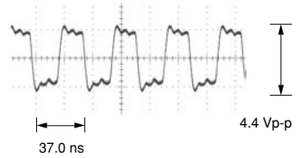
⑫ Q1306 Ⓔ



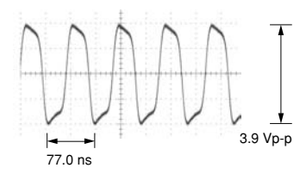
⑬ IC1702 ③④



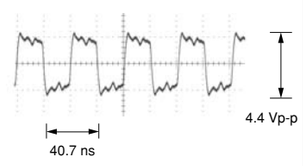
⑭ IC1702 ⑦⑧



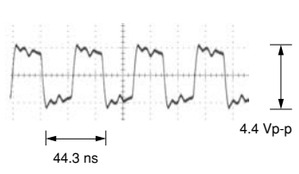
⑮ IC1702 ⑫



⑯ IC1702 ⑮

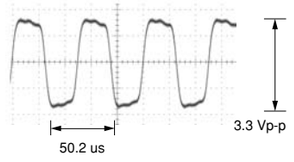


⑰ IC1702 ⑱

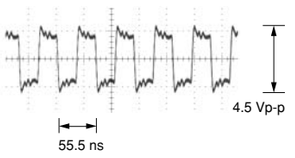


⑱ IC1702 ⑳

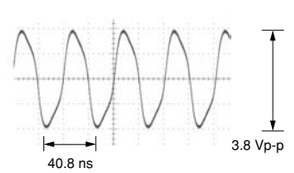
⑲ IC2105 ② (JL2127)



⑳ IC2106 ⑩

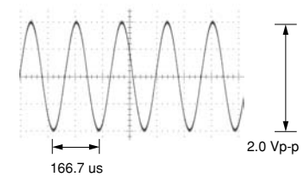


㉑ IC2202 ㉑



TX-003 BOARD

① IC1001 ㉟



AV-84 BOARD(1/8)

POWER

-REF.NO.:10000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

TO SWITCHING REGULATOR CN3
(SEE PAGE 4-80)

CN101 13P
GND 1 JL101
UNSW3.3V 2 JL102
GND 3 JL103
SW3.3V 4 JL104
UNSW6V 5
UNSW6V 6
GND 7
SW12V 8 JL105
GND 9
UNSW12V 10 JL106
GND 11
UNSW-8V 12 JL107
XP_FAIL 13 JL108

JL117

XP_FAIL
FAN_ON
1 TO(5/8)
FAN_HI
FAN_DET

CN102 3P
FAN OUT 3 JL115
FAN SENS 2 JL116
GND 1 JL117
DC FAN

IC101
9V REG
IC101 SI-3010KM-TL
6 GND
CTL 1
IN 2
GND 3
OUT 4
ADJ 5
R0 P5.0
12.2
R0 P7.4
R0 P1.0
R109 100k ±0.5%
R110 10k
Q101 MUN2213T1 SWITCH
R0 P0.4
0
C105 0.1u B 16V
R111 5600 ±0.5%
C112 0.01u B 25V
C113 47u 16V

R118 10k

IC102
5V REG
IC102 PQ1MX55M2SPQ
VIN 4 5.8
VOUT 5 5.1
CONT 3 3.3
GND 2
ADJ 1 1.2
R137 330k ±0.5%
R139 47k ±0.5%
R138 120k ±0.5%
C103 0.1u B
C108 1u B

IC103
5V REG
IC103 TK11250CMCL-G
VIN 6 5.8
GND 5
VOUT 4 5.0
CONT 1 5.8
GND 2
NP 3 1.3
C104 0.1u B 16V
C116 0.01u B 25V
C117 1u B 10V

JL110
JL111

B+
B-

SW3.3V
UNSW6V
VIN_GND
2 TO(2/8)
SW3.3V
UNSW12V
UNSW-8V
UNSW5V
GND
VOUT_GND
3 TO(3/8)
UNSW6V
SW5V
TU_GND
IT_GND
4 TO(4/8)
SW5V
SW3.3V
UNSW-8V
UNSW6V
UNSW5V
IT_GND
5 TO(5/8)
SW3.3V
UNSW5V
VIN_GND
6 TO(6/8)
SW3.3V
SW5V
UNSW-8V
VOUT_GND
TU_GND
VIN_GND
7 TO(7/8)
UNSW12V
UNSW6V
UNSW-8V
VIN_GND
VOUT_GND
25 TO(8/8)

R108 0
R105 0
R107 0
R106 0

AV-84 BOARD(2/8)

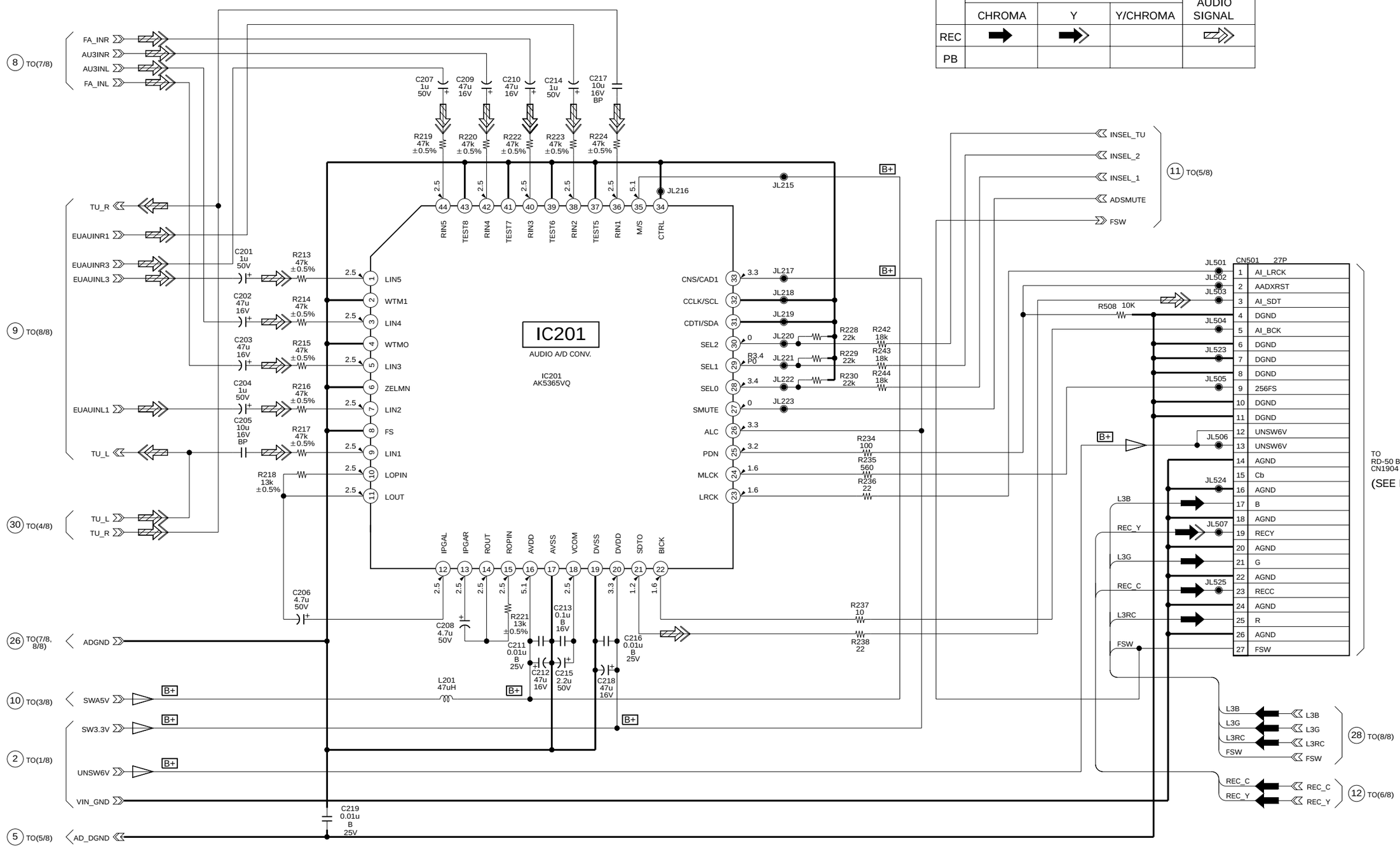
AUDIO IN

REF.NO.:10000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		⇨
PB				



AV-84 BOARD(3/8)

AUDIO OUT

-REF.NO.:10000 SERIES-

NO MARK:REC/PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB	⇨	⇨	⇨	⇨

CN503 25P

SPDIFO	1	JL515
DGND	2	JL529
Rch+	3	JL530
RMUTE	4	JL531
Rch-	5	
AUGND	6	JL532
AUGND	7	JL533
A5V	8	JL534
Lch+	9	JL535
LMUTE	10	JL536
Lch-	11	
DGND	12	JL537
DGND	13	
DGND	14	
V	15	JL516
DGND	16	
C	17	JL517
DGND	18	
Y	19	JL518
DGND	20	
Y/G	21	JL519
DGND	22	
CB/B	23	JL520
XVMUTE	24	JL521
CR/R	25	JL522

TO RD-50 BOARD(1/22) CN1903 (SEE PAGE 4-33)

V, C, Y, Y/G, CB/B, XVMUTE, CR/R → 13 TO(7/8)

33 TO(8/8) XVMUTE

3 TO(1/8)

IC302 AUDIO AMP

BA4558F-HT

Q310 2SD1938(F)-T(TX),SO

Q309 2SD1938(F)-T(TX),SO

Q309,310 AUDIO MUTE

EUAUOUTR, EUAUOUTL → 29 TO(8/8)

AUGND, SPD_GND, AUOUTR2, AUOUTL2 → 14 TO(7/8)

Q304 2SB1561T100Q

Q303 MSD601-RT1

Q302 2SD1781K-T146-QR

Q301 MUN2111T1

Q301-304 POWER SWITCH

D301 M1MA152WK-T1

Q305,307,311 POWER MUTE

Q311 MSB709-RT1

Q305 MUN2213T1

Q307 DTC124TKA-T146

IC301 NJM78M05DL1A-TE1 (IN, GND, OUT)

IC301 5V REG

Q312 MSB709-RT1

Q306 MUN2213T1

Q306,308,312 R MUTE SWITCH

Q308 DTC124TKA-T146

Q313 MSD601-RT1 BUFFER

J301

3	GND
2	VCC
1	D IN

DIGITAL OUT PCM/DTS/MPEG/ DOLBY DIGITAL — COAXIAL, POTICAL

SW5V → 10 TO(2/8)

VOUT_GND, UNSW5V, UNSW12V, UNSW-8V, SW3.3V, GND

B+, B-

For Schematic Diagram

• Refer to page 4-4 for waveforms.

AV-84 BOARD(4/8)

TUNER

-REF.NO.:10000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	⇨
PB				

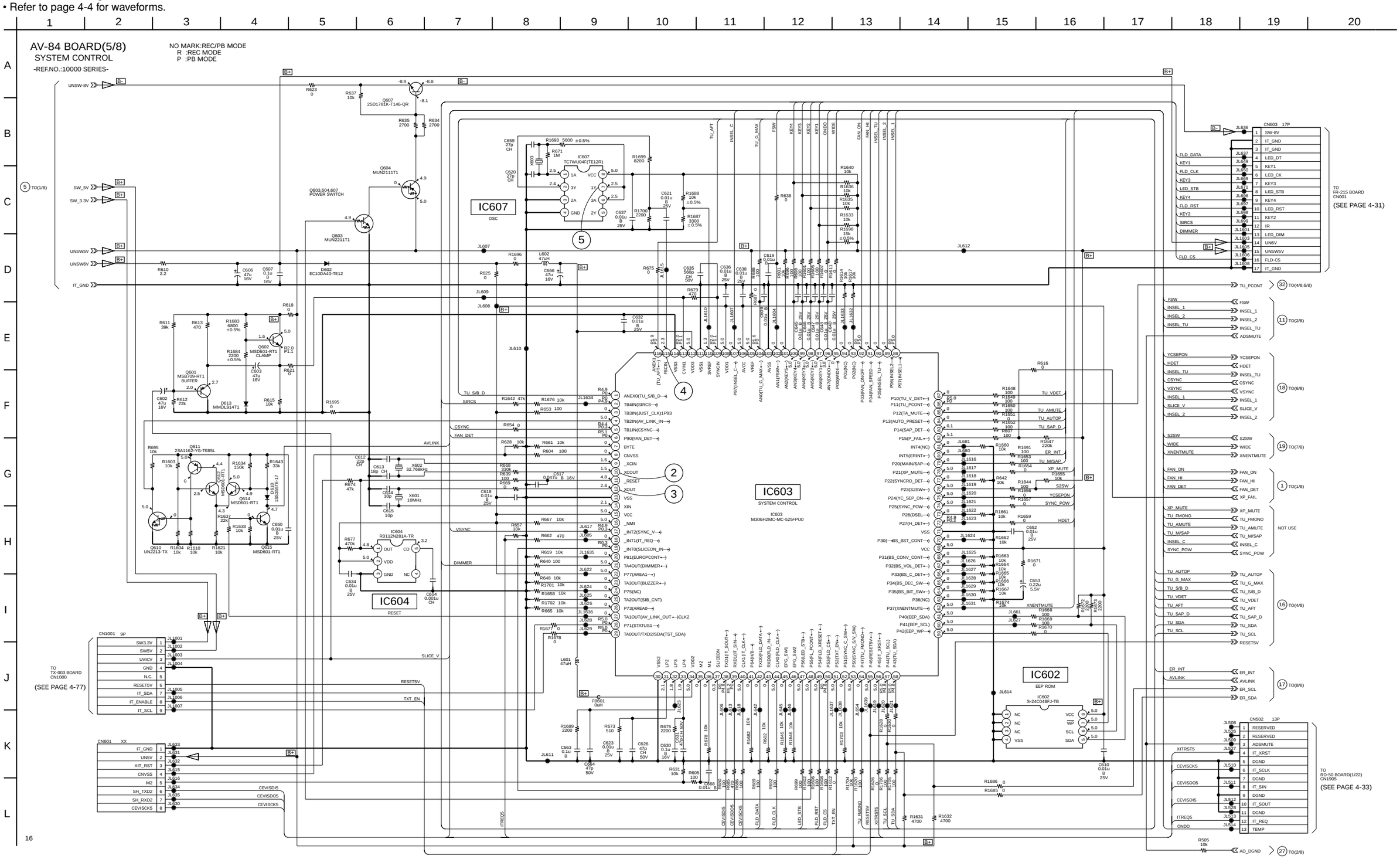
IC404
30V REG

IC401
TU 5V REG

IC405
EURO MSP
IC405
MSP3417G-QG-B8V3

For Schematic Diagram

• Refer to page 4-4 for waveforms.

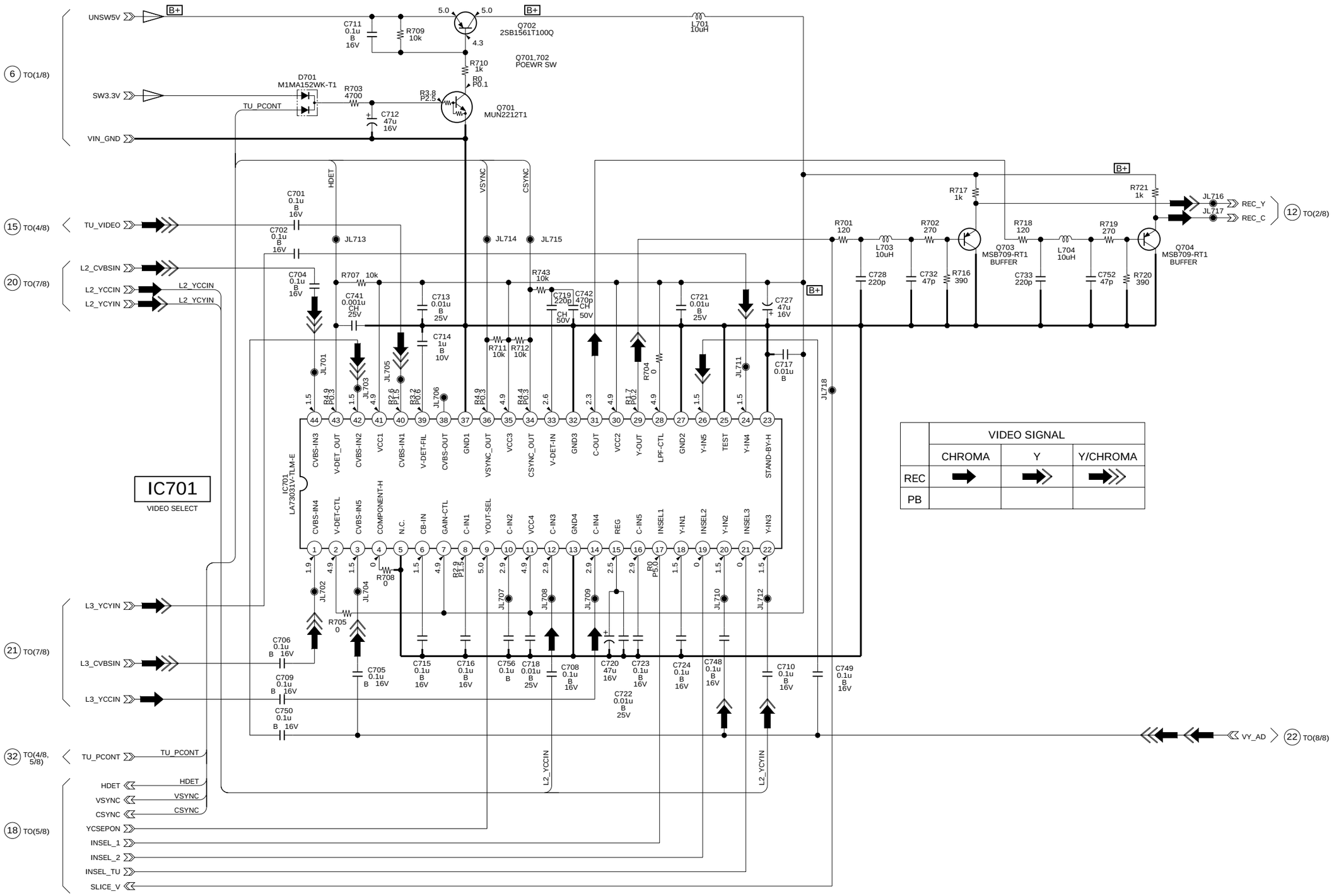


AV-84 BOARD(6/8)

VIDEO IN

-REF.NO.:10000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE



	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡	➡
PB			

For Schematic Diagram

• Refer to page 4-4 for waveforms.

AV-84 BOARD(7/8)

VIDEO OUT

-REF.NO.:10000 SERIES-

NO MARK:REC/PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	⇨
PB	⇨	⇨	⇨	⇨

IC802 VIDEO BUFFER

IC801 -5V REG

CN801 11P

1	S2 SW
2	Y2 IN
3	AN GND
4	C2 IN
5	AN GND
6	V2 IN
7	AN GND
8	L2 IN
9	AU GND
10	R2 IN
11	AU GND

TO FL-140 BOARD CN105 (SEE PAGE 4-30)

LINE 4 IN

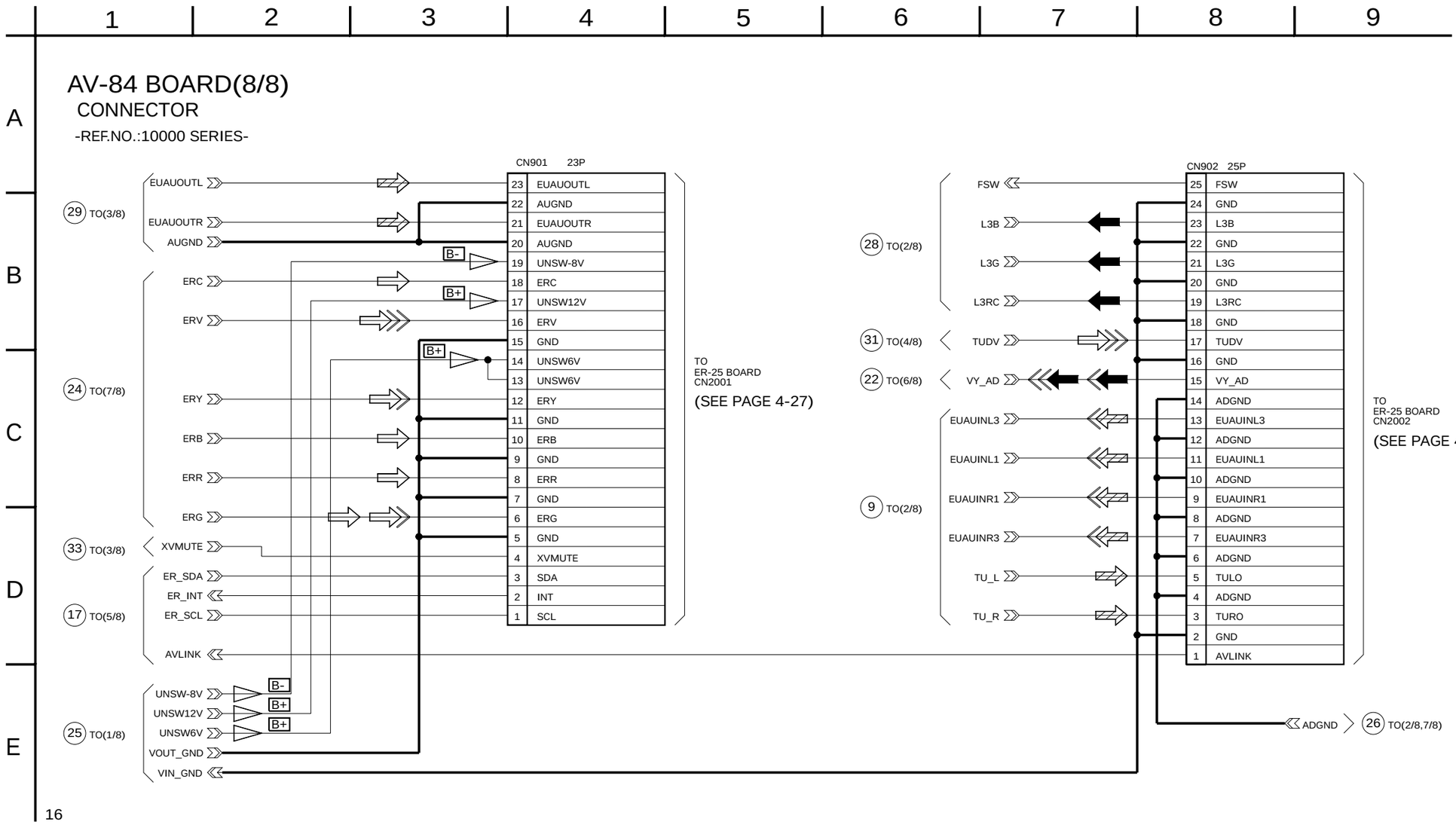
LINE 2 OUT

J802 COMPONENT VIDEO OUT Pr/Cr, Pa/Cb, Y

AV-84 BOARD(8/8)

CONNECTOR

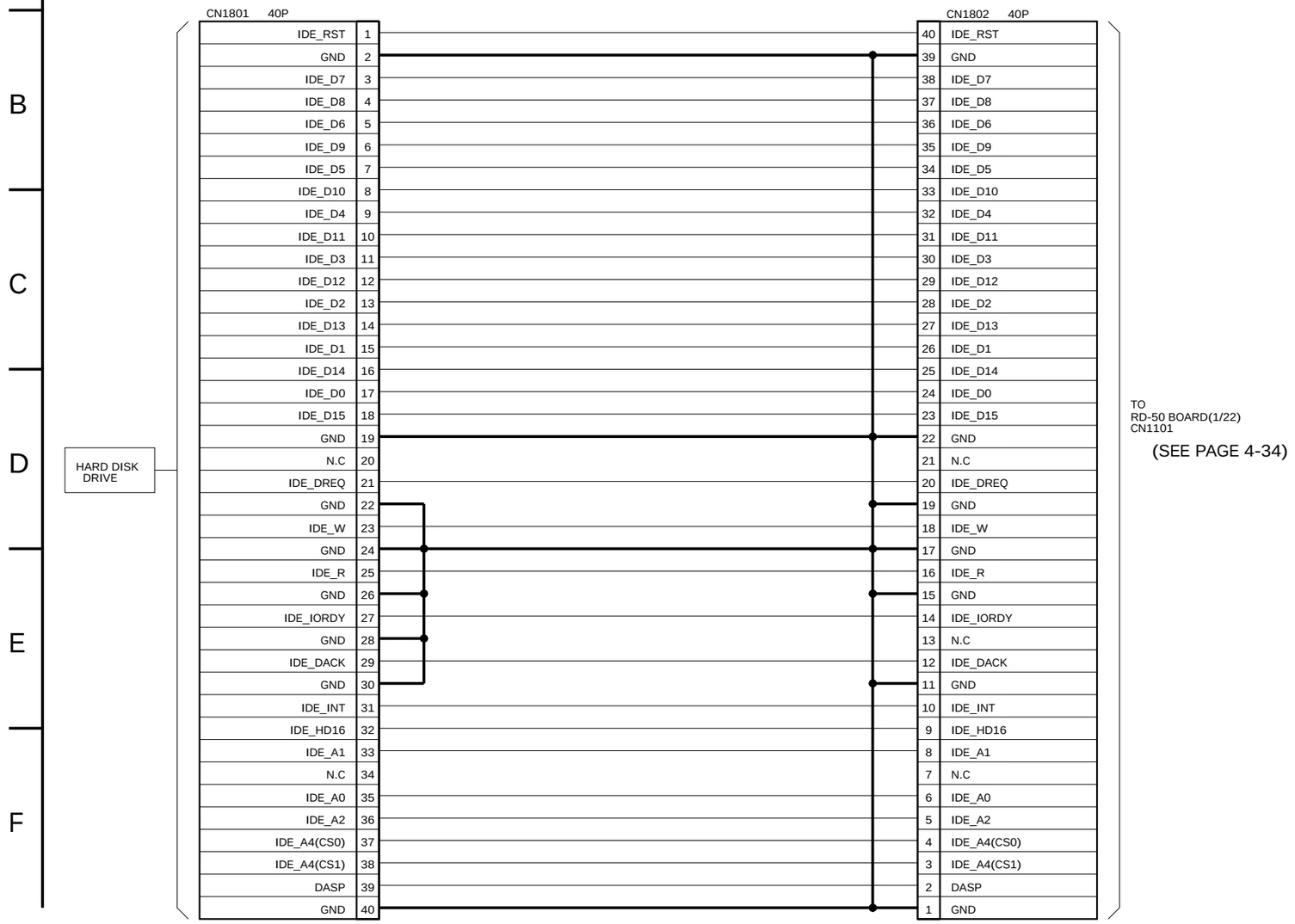
-REF.NO.:10000 SERIES-



CN-199 BOARD

RELAY

-REF.NO.:30000 SERIES-
XX MARK:NO MOUNT

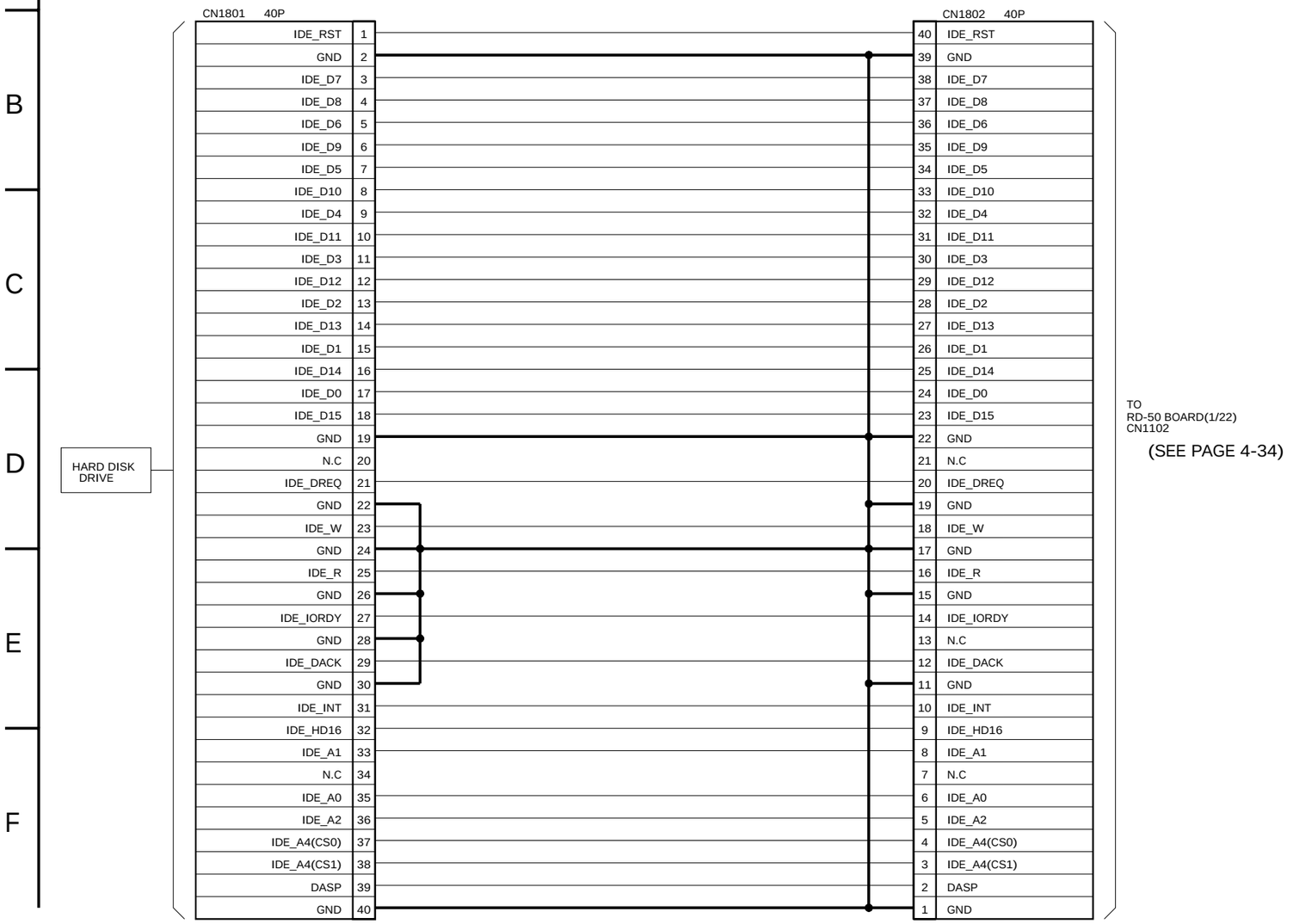


(SEE PAGE 4-34)

CN-220 BOARD

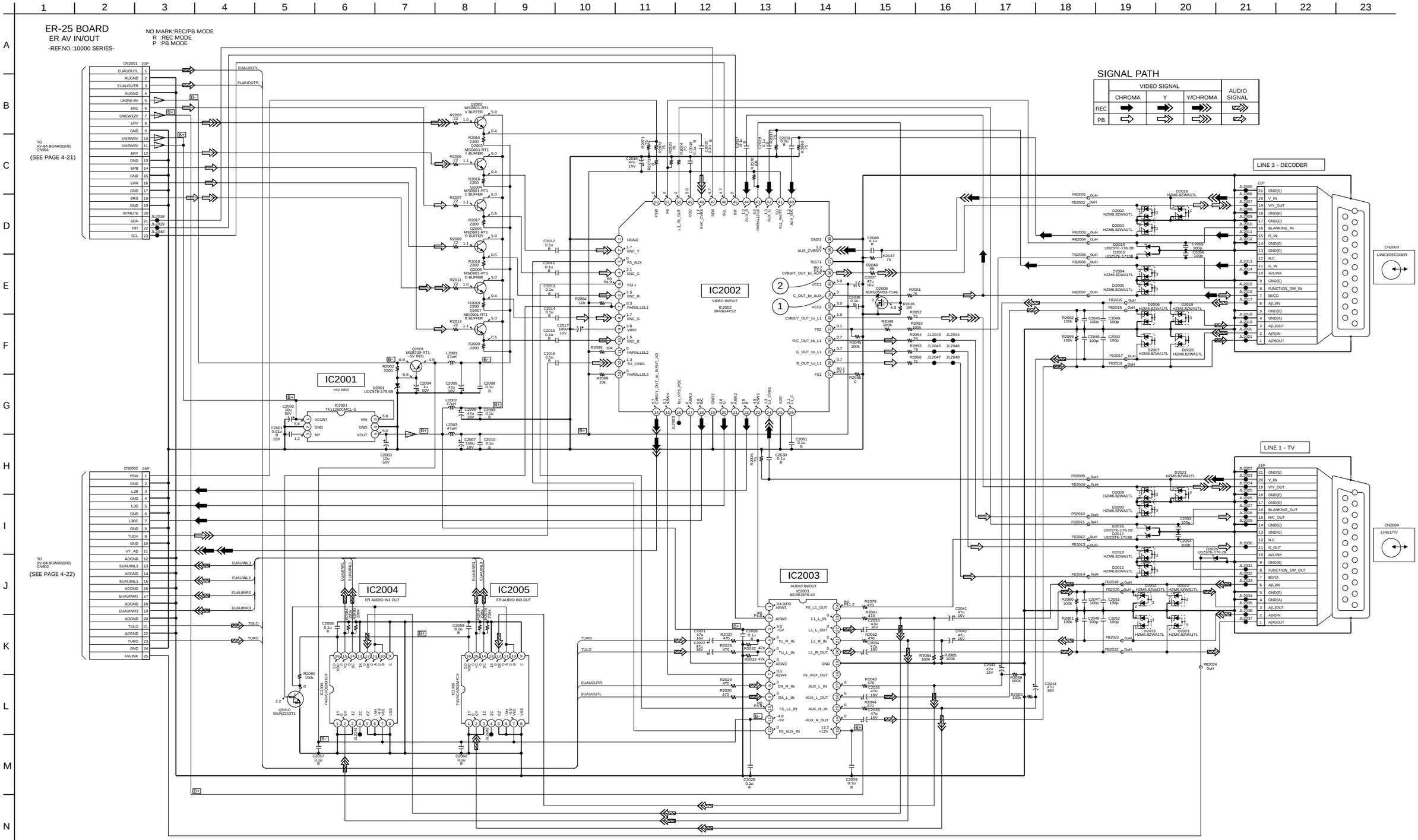
RELAY

-REF.NO.:30000 SERIES-
XX MARK:NO MOUNT



For Schematic Diagram

• Refer to page 4-5 for waveforms.



FL-140 BOARD
DV/LINE 2 IN/FL DRIVER
-REF.NO.:40000 SERIES-

NO MARK:REC/PB MODE

ND101 FLUORESCENT INDICATOR TUBE

ET101

CN102 9P

SW-8V	9	JL104 JL103 JL108
IT_GND	8	JL105 JL147
UNSW5V	7	JL106
KEY1	6	JL107
LED_RST	5	JL109
FLD_CS	4	JL110
LED_DT	3	JL111
LED_CK	2	JL112
IT_GND	1	JL185

TO FR-215 BOARD CN002 (SEE PAGE 4-32)

B- B+ FLD_RESET FLD1_CS FLD_SOUT FLD_SCLK

S101 (ON/Standby)

C101 47u 16V C102 0.01u B C105 0.1u B 50V 2012 R108 3300 C106 39p

JL128

IC101 INDICATOR TUBE DRIVER

IC101 ML9208-02MBZ03B

L101 47uH R102 2200 C112 100u 16V B-

Q101 2SC5053T100Q Q102 2SC5053T100Q C113 6800p 100V

Q101,102 SWITCHING

T101 CONVERTOR TRANSFORMER

D111 1SS355TE-17 D112 1SS355TE-17 D101 1SS355TE-17 D110 1SS355TE-17

JL101 JL102

C114 0.1u B 50V 2012 C115 22u 50V

Q103 2SB1197K-T-146-R SWITCH

R118 10k C116 0.1u B 50V 2012 D113 UDZSTE-1727B

D114 MA4PS27-TX R120 27k C118 0.1u B 50V 2012

J101 LINE 2 IN

S VIDEO

VIDEO

AUDIO L (MONO)

AUDIO R

R109 0 R110 0 R111 0 FB101 0uH FB102 0uH FB103 0uH

D104 STZ6.8N-T146 D105 STZ6.8N-T146 D106 STZ6.8N-T146 D107 STZ6.8N-T146 D108 STZ6.8N-T146 D109 STZ6.8N-T146

R112 75 R113 75 R114 75 C109 100p C110 100p R116 220k R115 220k

CN105 11P

1	S2 SW
2	Y2 IN
3	AN GND
4	C2 IN
5	AN GND
6	V2 IN
7	AN GND
8	L2 IN
9	AU GND
10	R2 IN
11	AU GND

TO AD-84 BOARD(7/8) CN801 (SEE PAGE 4-20)

D102 STZ6.8N-T146

DV IN

CN103 4P

TPB-	1
TPB+	2
TPA-	3
TPA+	4

CN104 6P

1	DGND
2	TPB-
3	TPB+
4	TPA-
5	TPA+
6	DGND

TO RD-50 BOARD(21/22) CN2201 (SEE PAGE 4-74)

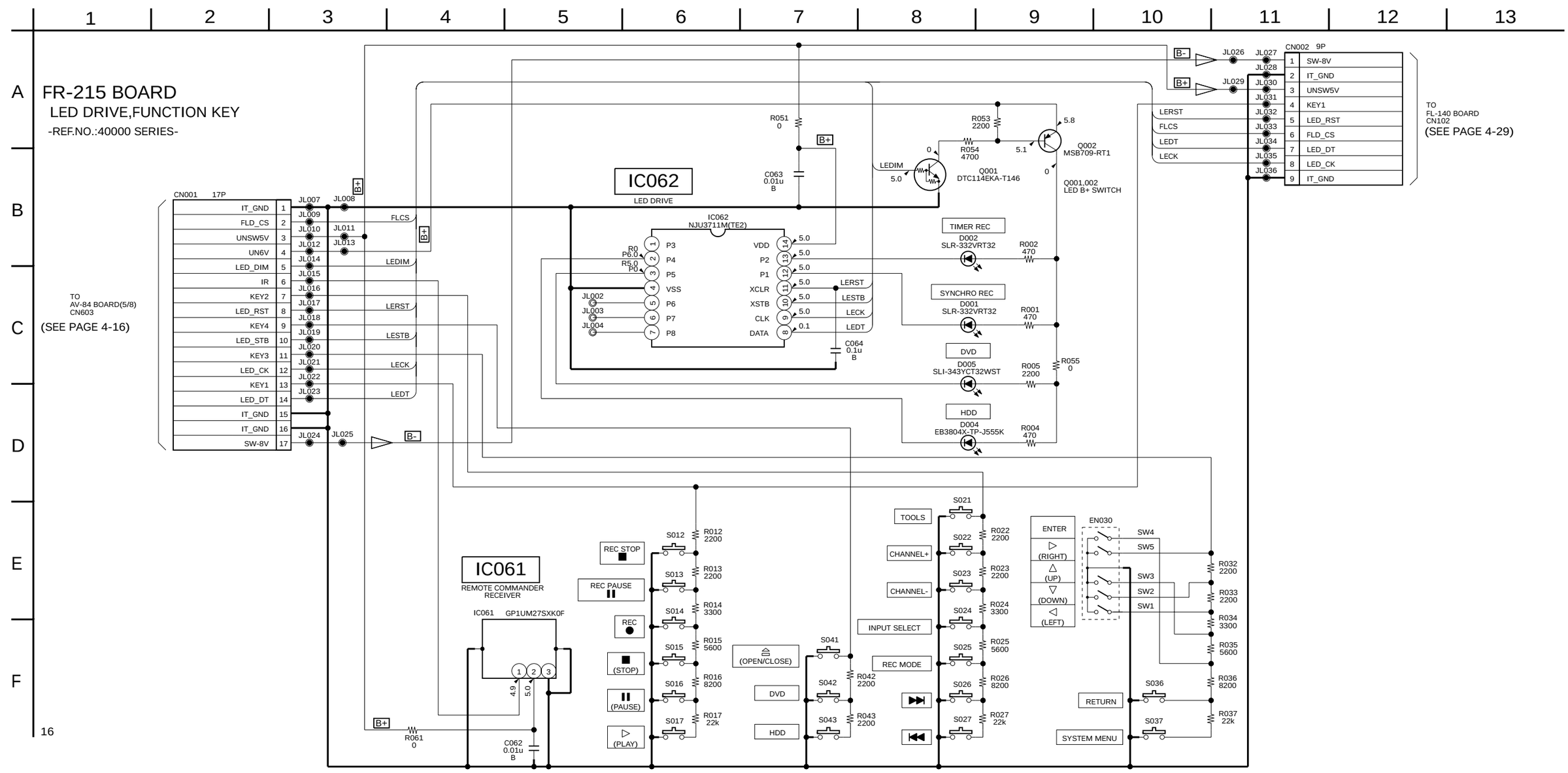
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	⇨
PB			⇨	⇨

FR-215 BOARD

LED DRIVE,FUNCTION KEY

-REF.NO.:40000 SERIES-



RD-50 BOARD(1/22)

CONNECTOR

-REF.NO.:20000 SERIES-

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	⇨
PB	⇨	⇨	⇨	⇨

TO AV-84 BOARD(2/8) CN501 (SEE PAGE 4-24)

TO AV-84 BOARD(5/8) CN502 (SEE PAGE 4-16)

TO AV-84 BOARD(3/8) CN503 (SEE PAGE 4-11)

CN1904 27P: AI_LRCK 1 (JL1904, R1916 0, ADLRCKI), AADXRST 2 (JL1910), AI_SDT 3 (JL1906, R1901 0, ADDATI), DGND 4 (JL1909), AI_BCK 5 (JL1902, R1912 0, ADBCKI), DGND 6, DGND 7, DGND 8, 256FS 9 (JL1901, FB1901, PLL256L1), DGND 10, DGND 11, UNSW6V 12 (JL1911, JL1912, R1917 0, B+, VDEC6V), UNSW6V 13 (XSWGBRST2), AGND 14, Cb 15 (JL1953, RECB), AGND 18, B 17, AGND 18, RECY 19 (JL1915, RECY), AGND 20, G 21 (RECG), AGND 22, RECC 23 (JL1917, RECC), AGND 24, R 25 (RECR), AGND 26, FSW 27 (FSW)

CN1905 13P: EPG_SDA 1 (R1919 0, EPG_SCL), EPG_SCL 2 (R1918 0, EPG_SDA), ADSMUTE 3 (JL1934, XVMUTE), IT_XRST 4 (JL1919, ADSMUTE), DGND 5, IT_SCLK 6 (JL1921, R1911 0, XITRST5), DGND 7, IT_SIN 8 (JL1923, JL1956, R1913 0, ITSCK5), DGND 9, IT_SOUT 10 (JL1925, JL1957, R1914 0, ITSDO5), DGND 11, IT_REQ 12 (JL1927, R1915 0, ITSDI5), TEMP 13 (JL1932, TH1901, ITREQ5, XSWGBRST2)

CN1903 25P: SPDIFO 1 (JL1938, R1903 0, SPDIFAO), DGND 2, Rch+ 3 (JL1939, AOUTR+), RMUTE 4 (JL1940, XRMUTE), Rch- 5 (JL1941, AOUTR-), AUGND 6 (JL1958), AUGND 7 (JL1959, C1901 0.01u B, JL1942, R1904 0, B+, AUGND, A5V), A5V 8 (A5V), Lch+ 9 (JL1943, AOUTL+), LMUTE 10 (JL1944, XLMUTE), Lch- 11 (JL1945, AOUTL-), DGND 12 (JL1960), DGND 13 (JL1961), DGND 14, V 15 (JL1946, R1905 0, V), DGND 16, C 17 (JL1947, R1906 0, C), DGND 18, Y 19 (JL1948, R1907 0, Y), DGND 20, Y/G 21 (JL1949, R1908 0, Y/G), DGND 22, CB/B 23 (JL1950, R1909 0, CB/B), XVMUTE 24 (JL1951, R1910 0, CR/R), CR/R 25 (JL1952, GND)

1 TO(3/22) 2 TO(18/22) 3 TO(2/22) 5 TO(12/22) 6 TO(12/22) 7 TO(10/22) 8 TO(8/22)

10 TO(19/22) 34 TO(5/22)

DGND, SW3.3V, B+, C1130 0.1u B, C1131 0.1u B, C1132 0.1u B, C1133 0.1u B

ATP_D0 ATP_D1 ATP_D2 ATP_D3 ATP_D4 ATP_D5 ATP_D6 ATP_D7 ATP_D8 ATP_D9 ATP_D10 ATP_D11 ATP_D12 ATP_D13 ATP_D14 ATP_D15 ATP_A0 ATP_A1 ATP_A2 ATP_A3 ATP_A4 ATP_INTRQ ATP_XDMAC ATP_IORDY ATP_XDIOR ATP_XDIOW ATP_DMARQ ATP_XRESET

ATS_D0 ATS_D1 ATS_D2 ATS_D3 ATS_D4 ATS_D5 ATS_D6 ATS_D7 ATS_D8 ATS_D9 ATS_D10 ATS_D11 ATS_D12 ATS_D13 ATS_D14 ATS_D15 ATS_A0 ATS_A1 ATS_A2 ATS_A3 ATS_A4 ATS_INTRQ ATS_XDMAC ATS_IORDY ATS_XDIOR ATS_XDIOW ATS_DMARQ ATS_XRESET

CN1101 40P

JL1167	1	GND
	2	DASP
ATP_A3 (JL1107)	3	IDE_A3(CS1)
ATP_A4 (JL1108)	4	IDE_A4(CS0)
ATP_A2 (JL1109)	5	IDE_A2
ATP_A0 (JL1110, JL1111, RB1101 33X4)	6	IDE_A0
	7	NC
ATP_A1 (JL1112, JL1113, R1170 33)	8	IDE_A1
ATP_INTRQ (JL1114, R1171 82, R1166 10k)	9	IDE_HD16
ATP_XDMAC (JL1115, R1172 22, R1198 1k)	10	IDE_INT
	11	GND
ATP_IORDY (JL1116, R1173 82)	12	IDE_DACK
ATP_XDIOR (JL1117, R1174 22)	13	NC
ATP_XDIOW (JL1118, R1175 22)	14	IDE_IORDY
ATP_DMARQ (JL1119, R1176 82, R1167 5600)	15	GND
	16	IDE_R
ATP_D15 (JL1120)	17	GND
ATP_D0 (JL1121)	18	IDE_W
ATP_D14 (JL1122)	19	GND
ATP_D1 (JL1123)	20	IDE_DREQ
ATP_D13 (JL1124)	21	NC
ATP_D2 (JL1125)	22	GND
ATP_D12 (JL1126)	23	IDE_D15
ATP_D3 (JL1127, RB1103 33X4)	24	IDE_D0
ATP_D11 (JL1128)	25	IDE_14
ATP_D4 (JL1129)	26	IDE_D1
ATP_D10 (JL1130)	27	IDE_D13
ATP_D5 (JL1131, RB1104 33X4)	28	IDE_D2
ATP_D9 (JL1132)	29	IDE_D12
ATP_D6 (JL1133)	30	IDE_D3
ATP_D8 (JL1134)	31	IDE_D11
ATP_D7 (JL1135, RB1105 33X4)	32	IDE_D4
	33	IDE_D10
ATP_XRESET (JL1136, R1177 33)	34	IDE_D5
	35	IDE_D9
	36	IDE_D6
	37	IDE_D8
	38	IDE_D7
JL1168	39	GND
	40	IDE_RST

TO CN-199 BOARD CN1802 (SEE PAGE 4-24)

CN1102 40P

JL1169	1	GND
JL1166	2	DASP
ATS_A3 (JL1137)	3	IDE_A3(CS1)
ATS_A4 (JL1138)	4	IDE_A4(CS0)
ATS_A2 (JL1139)	5	IDE_A2
ATS_A0 (JL1140, RB1106 33x4)	6	IDE_A0
	7	NC
ATS_A1 (JL1141, JL1142, R1178 33)	8	IDE_A1
ATS_INTRQ (JL1143, R1179 82, R1168 10k)	9	IDE_HD16
ATS_XDMAC (JL1144, R1180 22, R4104 1k)	10	IDE_INT
	11	GND
ATS_IORDY (JL1145, R1181 82)	12	IDE_DACK
ATS_XDIOR (JL1146, R1182 22)	13	NC
ATS_XDIOW (JL1147, R1183 22)	14	IDE_IORDY
ATS_DMARQ (JL1148, R1184 82, R1169 5600)	15	GND
	16	IDE_R
ATS_D15 (JL1149)	17	GND
ATS_D0 (JL1150)	18	IDE_W
ATS_D14 (JL1151)	19	GND
ATS_D1 (JL1152)	20	IDE_DREQ
ATS_D13 (JL1153)	21	NC
ATS_D2 (JL1154)	22	GND
ATS_D12 (JL1155)	23	IDE_D15
ATS_D3 (JL1156, RB1107 33x4)	24	IDE_D0
ATS_D11 (JL1157)	25	IDE_14
ATS_D4 (JL1158)	26	IDE_D1
ATS_D10 (JL1159)	27	IDE_D13
ATS_D5 (JL1160, RB1108 33x4)	28	IDE_D2
ATS_D9 (JL1161)	29	IDE_D12
ATS_D6 (JL1162)	30	IDE_D3
ATS_D8 (JL1163)	31	IDE_D11
ATS_D7 (JL1164, RB1109 33x4)	32	IDE_D4
	33	IDE_D10
	34	IDE_D5
	35	IDE_D9
	36	IDE_D6
	37	IDE_D8
	38	IDE_D7
JL1170	39	GND
ATS_XRESET (JL1165, R1185 33)	40	IDE_RST

TO CN-220 BOARD CN1802 (SEE PAGE 4-26)

For Schematic Diagram
• Refer to page 4-5, 4-6 for waveforms.

RD-50 BOARD(2/22)
VIDEO DECODER
-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

IC702
VIDEO DECODER
IC702
TVP5146M1PFP

IC701
3.3V REG
IC701
S-T111B33MC-QGSTFG

IC703
1.5V REG
IC703
PQ1M18SM2SPQ

SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	→	⇒	⇛
PB			

RD-50 BOARD(3/22)

AV GLUE

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

IC803
AV GLUE

IC803
CXD9779R

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	⇨
PB			⇨	

RD-50 BOARD(4/22)

AV ENCODER

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

IC901
AV ENCODER

IC901
UPD61052GD-LML-A

IC902
SDRAM

IC902
IC42S16400-7TG

IC903
SDRAM

IC903
IC42S16400-7TG

SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			➡
PB			

RD-50 BOARD(5/22)

MR PROCESS

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

▲:Voltage measurement of the CSP IC and the Transistors with ▲ mark,is not possible.

IC1101
MR PROCESS
▲IC1101
CXD9777GG

IC1102
256Mbit SDRAM
IC1102
MT48LC16M16A2P-75-Y16Y

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	⇨
PB			⇨	⇨

For Schematic Diagram

• Refer to page 4-5, 4-6 for waveforms.

RD-50 BOARD(6/22)

AV DECODER

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

IC1202
AV DECODER
IC1202
CXD1935Q

IC1201
1.8V REG
IC1201
S-T111B18MC-OGDTFG

SIGNAL PATH

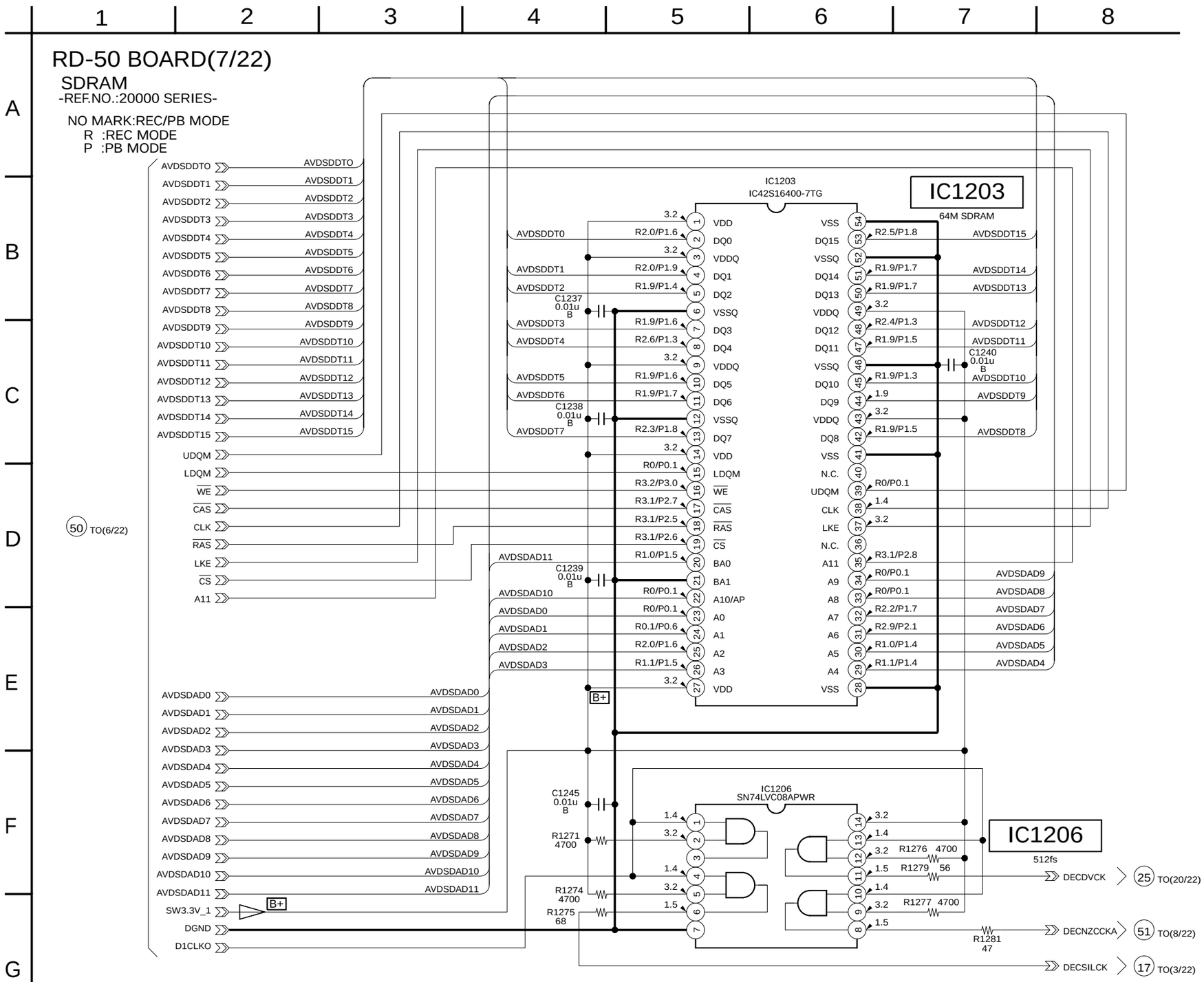
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	
PB			⇨	⇨

RD-50 BOARD(7/22)

SDRAM

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE



16

For Schematic Diagram

• Refer to page 4-5, 4-6 for waveforms.

RD-50 BOARD(8/22)
NAZCA
-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE

▲ :Voltage measurement of the CSP IC and the Transistors with ▲ mark, is not possible.

IC1306
V REF REG

IC1301
NAZCA

▲ IC1301
CXD4701GB

SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC			
PB	⇨	⇨	⇨

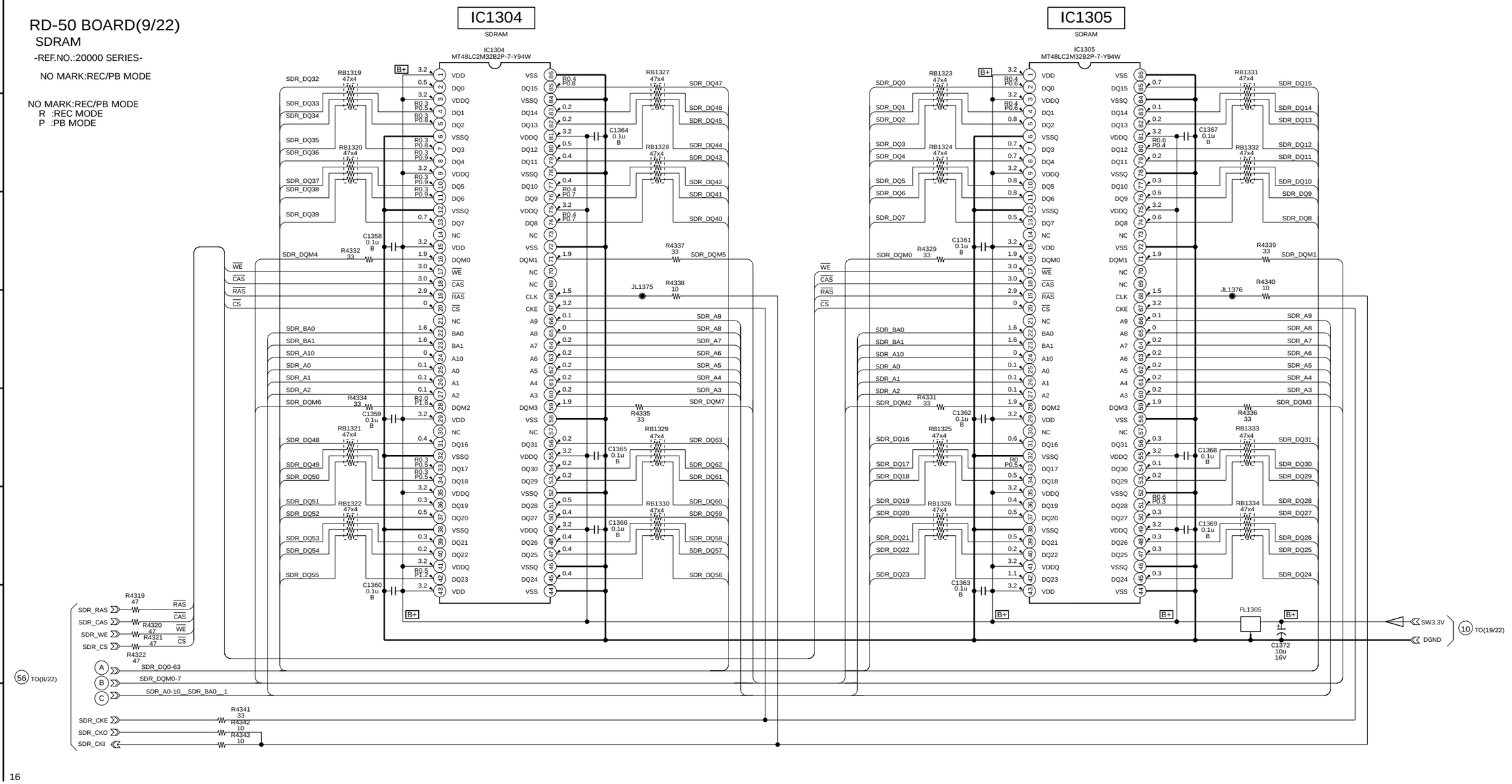
RD-50 BOARD(9/22)

SDRAM

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE



RD-50 BOARD(10/22)

AUDY,DAC

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE

SIGNAL PATH

	AUDIO SIGNAL
REC	⇒
PB	⇒

IC1601

2ch DAC

IC1601 AK4381VT-E2

XAMUTE
PLL512L2
DABCKO
DALRCKO
XSWGBRST
XDSRCS
SCIF2_SCK
SCIF2_SDO

MCLK BICK SDTI LRCK PDN CSN CCLK CDTI

DZFL DZFR VDD VSS AOUTL+ AOUTL- AOUTR+ AOUTR-

R1603 100
R1605 10k
R1604 10k
D1601 1SS355TE-17
D1602 1SS355TE-1

XLMUTE
XRMUTE
AOUTL+
AOUTL-
AOUTR+
AOUTR-
SPDIFAO
A5V
AUGND
B+
7 TO(1/22)

C1602 0.001u B
C1601 0.01u B
C1603 0.22u B
C1604 10u 16V

C1504 0.01u B
C1505 0.01u B

TEST1 SPDIFO VSS FLFRO SLSRO CSWO DLDRO VDD VSS DMLO DMRO VSS DLO DRO VDD DCO DLFEO DEXRO DLSO DRSO VSS A4 A5 A6 A7

JL1505 JL1506 JL1507 JL1509 JL1510 JL1511 JL1512 JL1513 JL1514 JL1515 JL1516 JL1517

ADA4 ADA5 ADA6 ADA7

IC1501

AUDY

IC1501
CXD9722ATQ

A8 A9 VSS A3 A2 A1 A0 A10 A11 VDD CKE CLK CS RAS CAS WE VSS D7 D6 VDD D5 D4 D3 D2 D1

ADA8 ADA9 ADA3 ADA2 ADA1 ADA0 ADA10 ADA11 ADCKE ADCLK XADCS XADRAS XADCAS XADWES ADD7 ADD6 ADD5 ADD4 ADD3 ADD2 ADD1

C1508 0.01u B
C1509 0.01u B
R1512 0

DEXRI DMLI DMRI VSS PHRI BCKAI DQM DLI DRI DCI DLFEI DLSI DRSI VSS D15 D14 D13 D12 D11 D10 VDD D9 D8 GND D0

ADD15 ADD14 ADD13 ADD12 ADD11 ADD10 ADD9 ADD8 ADD0

JL1508

C1502 0.01u B
C1503 0.01u B
C1506 0.01u B
C1510 10u 16V

IC1502

16M SDRAM

IC1502
IC42S16100-7TG (T&R)

VCC DQ0 DQ1 VSSQ DQ2 DQ3 VCCQ DQ4 DQ5 VSSQ DQ6 DQ7 VCCQ DQML WE CAS RAS CS A11(BA) A10/AP A0 A1 A2 A3 VCC

VSS DQ15 DQ14 VSSQ DQ13 DQ12 VCCQ DQ11 DQ10 VSSQ DQ9 DQ8 VCCQ N.C. DQMU CLK CKE N.C. A9 A8 A7 A6 A5 A4 VSS

ADD0 ADD1 ADD2 ADD3 ADD4 ADD5 ADD6 ADD7 XADWES XADCAS XADRAS XADCS ADA11 ADA10 ADA0 ADA1 ADA2 ADA3

ADD15 ADD14 ADD13 ADD12 ADD11 ADD10 ADD9 ADD8 ADA9 ADA8 ADA7 ADA6 ADA5 ADA4 ADCLK ADCKE

C1511 0.01u B
C1512 0.01u B
C1513 0.01u B
C1514 0.01u B

JTAGTRST JTAGTMS JTAGTCK AVDTDO AUDTDO
61 TO(11/22)

TRST TMS TCK TDI TDO TEST2 SPDIFI VSS LRCKI BCKI VDD VSS DLDRI CSWI SLSRI FLFRI TEST3 CLK512 VSS XRST VDD SCLK XCS SI SO

SPDO DALRCKO DALRCKO DABCKO DABCKO XSWGBRST XSWGBRST DADATO

PLL512L4 PLL512L2
62 TO(18/22)

R1508 100

SCIF2_SCK SCIF2_SDO SCIF2_SDO SCIF2_SDI
63 TO(12/22)

XDSRCS XDSRCS XAMUTE XAMUTE XAUDCS

XDSRCS SCIF2_SCK SCIF2_SDO SCIF2_SDI
92 TO(22/22)

28 TO(3/22)

DGND
SW3.3V
10 TO(19/22)

B+

16

RD-50 BOARD(11/22)

NO MARK:REC/PB MODE

JTAG

-REF.NO.:20000 SERIES-

21 TO(3/22)
SILTDO JL1406
MRTDO JL1407
JTAGTCK JL1408
JTAGTMS JL1409
JTAGTRST JL1410

35 TO(5/22)
MRTDO JL1411
AUDTDO JL1412
JTAGTCK JL1413
JTAGTMS JL1414
MRTRST JL1415

61 TO(10/22)
AUDTDO JL1416
AVDTDO JL1417
JTAGTCK JL1418
JTAGTMS JL1419
JTAGTRST JL1420

47 TO(6/22)
AVDTDO JL1421
AVDTDI JL1422
JTAGTCK JL1423
JTAGTMS JL1424
JTAGTRST JL1425
JL1439 TDI

55 TO(8/22)
NAZTDO JL1426
SILTDO JL1427
JTAGTCK JL1428
JTAGTMS JL1429
XNZCRST JL1430
JL1456 TCK
JL1455 TMS

52 TO(8/22)
XNZCRST

65 TO(17/22)
GPSTDO JL1431
GPSTDI JL1432
SHGPSTCK JL1433
SHGPSTMS JL1434
GPSTRST JL1435

NOT USE
SHTDO JL1401
GPSTDO JL1402
SHGPSTCK JL1403
SHGPSTMS JL1404
SHTRST JL1405
JL1444 TDO
JL1441 SHTDI
JL1445 TCK1
JL1446 TMS1
JL1457 SHTRST
JL1447 XSHCA

26 TO(3/22,6/22, 12/22)
XSWGBRST
R1466 33

66 TO(12/22)
XSHCA
NZCRST1
XSHRST

46 TO(19/22)
UNSW3.3V
DGND
R1446 10k
B+

IC1402
SN74LV125APWR
1 1OE
2 1A
3 1Y
4 2OE
5 2A
6 2Y
7 GND
14 VCC
13 4OE
12 4A
11 4Y
10 3OE
9 3A
8 3Y
B+
C1401 0.1u B 1005
R1470 56
R1474 47
R1472 10k
R215 10k
JL1448 JTAGTST
JL217 JL1440 ACC
JL1449

IC1402
BUFFER

SIGNAL PATH

	AUDIO SIGNAL
REC	⇨
PB	⇨

For Schematic Diagram

• Refer to page 4-5, 4-6 for waveforms.

RD-50 BOARD(12/22)

SH

-REF.NO.:20000 SERIES-

▲ :Voltage measurement of the CSP IC and the Transistors with ▲ mark,is not possible.

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

IC111 EEP ROM

IC104 BUFFER

IC103 SH

IC112 BUFFER

RD-50 BOARD(13/22)

SDRAM,NAND FLASH

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

IC108
256M SDRAM

IC108
MT48LC16M16A2P-75-Y16Y

IC109
256M SDRAM

IC109
MT48LC16M16A2P-75-Y16Y

IC401
SWITCH

IC401
TC7WH157FK(TE85R)

IC402
256M NAND FLASH

IC402
K9F2808U0C-PCB0T

IC106
66fs CLOCK

IC106
CDCVF2505PWR

74 TO(12/22, 15/22)
76 TO(12/22, 14/22)
77 TO(12/22, 15/22)
78 TO(12/22)
79 TO(12/22)
80 TO(17/22)

RD-50 BOARD(14/22)

SWA/UNSW BUFFER-1

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

IC303
SN74LVC16245ADGGR

IC303
SWA BUFFER

IC304
SN74LVC16245ADGGR

IC304
SWA BUFFER

IC307
SN74LVC16245ADGGR

IC307
UNSW BUFFER

IC310
SN74LVC16245ADGGR

IC310
UNSW BUFFER

76 TO(12/22,13/22)

10 TO(19/22)

89 TO(15/22)

85 TO(17/22)

13 TO(3/22,4/22,5/22,6/22,8/22,20/22)

39 TO(5/22,6/22,8/22,20/22)

54 TO(8/22)

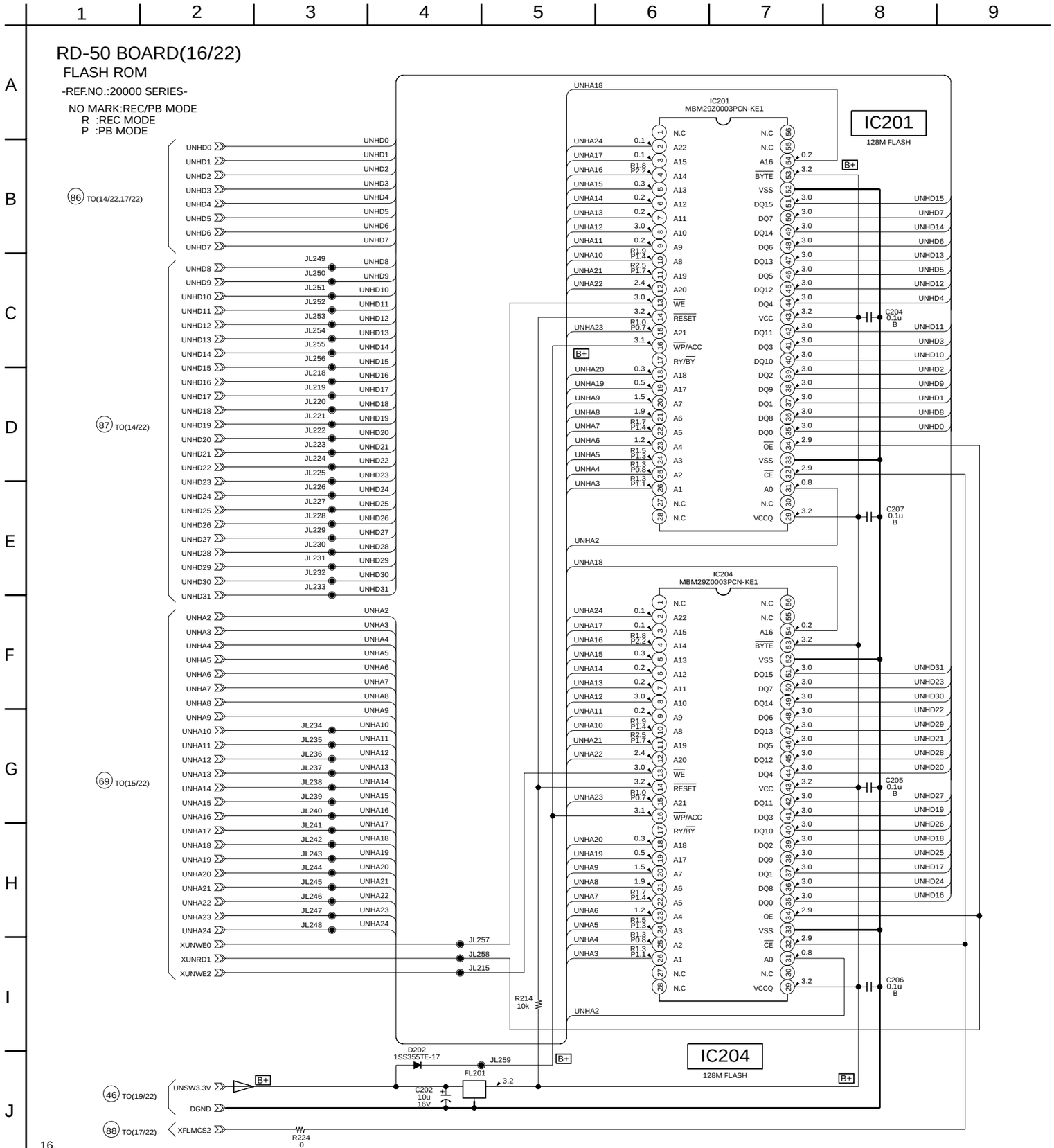
86 TO(16/22,17/22)

87 TO(16/22)

RD-50 BOARD(15/22)
SWA/UNSW BUFFER-2
-REF.NO.:20000 SERIES-
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

IC301 SWA BUFFER
IC302 SWA BUFFER
IC305 SWA BUFFER
IC306 UNSW BUFFER
IC308 UNSW BUFFER
IC309 UNSW BUFFER
SN74LVC16244ADGGR

SWA/UNSW BUFFER-2
RD-50 (15/22)


RD-50 BOARD(16/22)
FLASH ROM
-REF.NO.:20000 SERIES-
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC201
MBM29Z0003PCN-KE1
128M FLASH
IC204
MBM29Z0003PCN-KE1
128M FLASH
C204 0.1u B
C205 0.1u B
C206 0.1u B
C207 0.1u B
C202 10u 16V
D202 1SS355TE-17
FL201
R214 10k
R224 0
B+
86 TO(14/22,17/22)
87 TO(14/22)
69 TO(15/22)
46 TO(19/22)
88 TO(17/22)
UNSW3.3V
DGND
XFLMCS2
XUNWE0
XUNRD1
XUNWE2

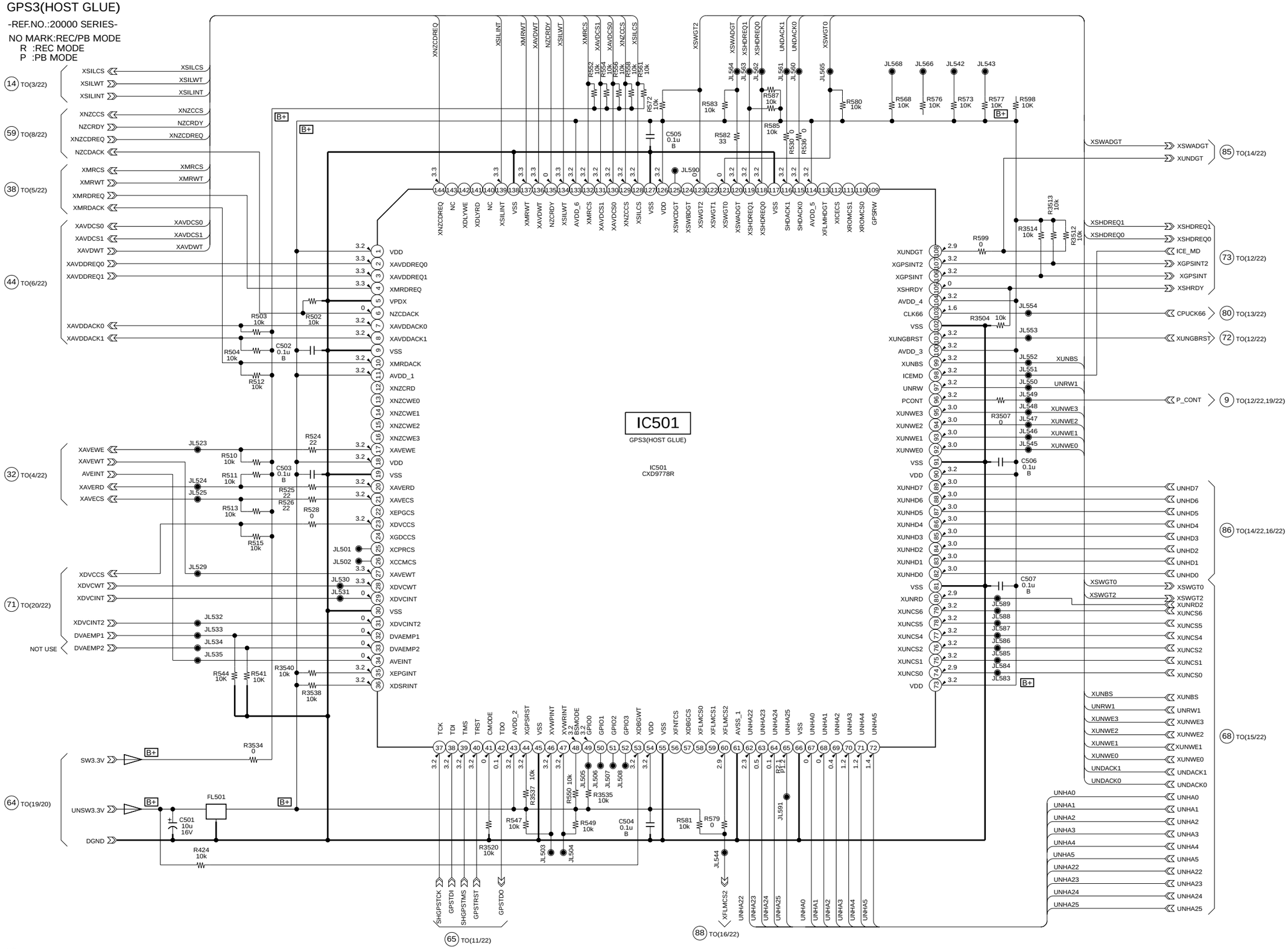
16

RD-50 BOARD(17/22)

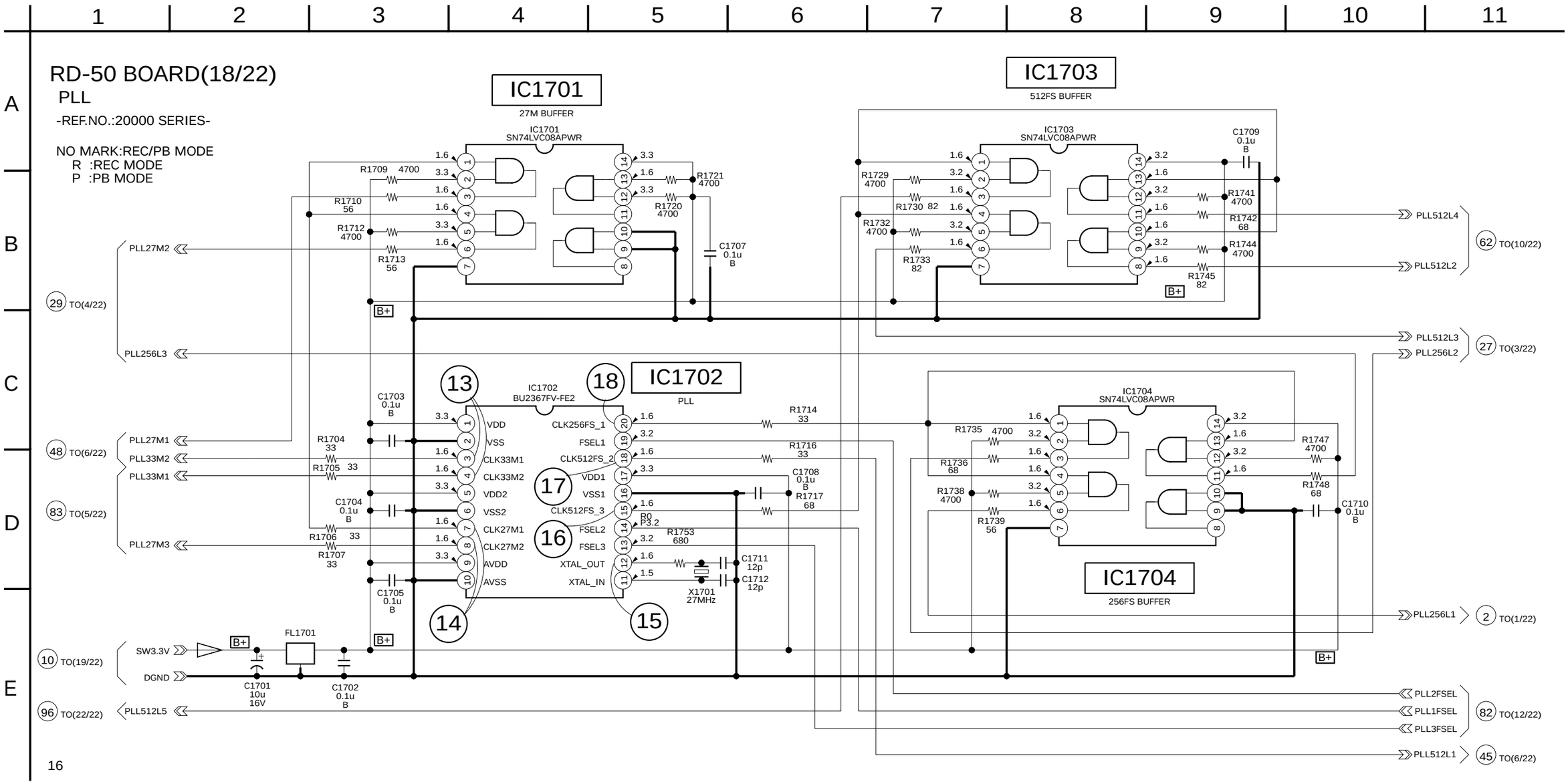
GPS3(HOST GLUE)

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE



For Schematic Diagram
• Refer to page 4-5, 4-6 for waveforms.



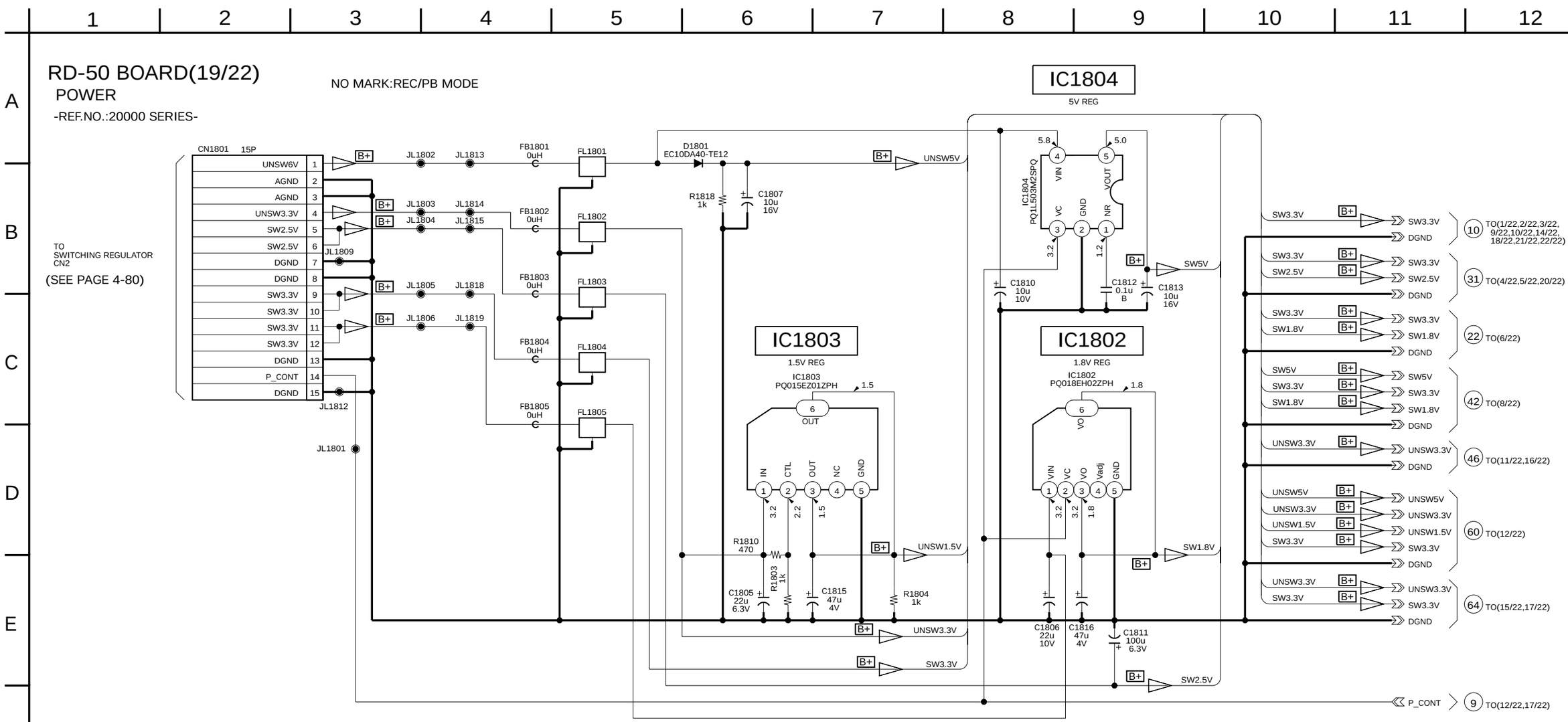
PLL
RD-50 (18/22)

RD-50 BOARD(19/22)

POWER

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE



For Schematic Diagram

• Refer to page 4-5, 4-6 for waveforms.

RD-50 BOARD(20/22)

DV PROCESS

-REF.NO.:20000 SERIES-

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	⇨
PB			⇨	⇨

IC2102
DV PROCESS
IC2102
UPD72893BGD-LML-A

IC2103
16M SDRAM

IC2105
INVERTER

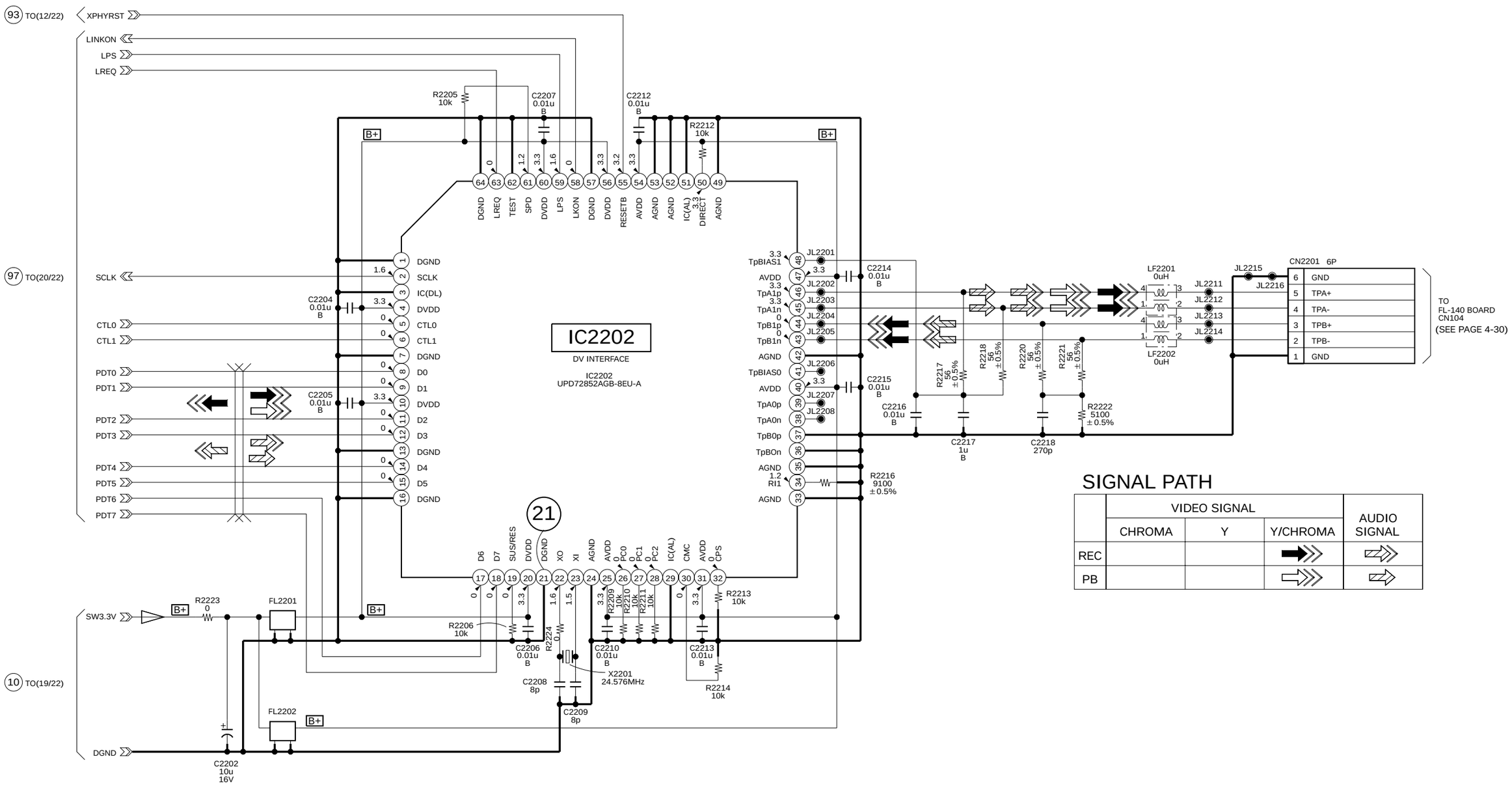
IC2106
PLL

For Schematic Diagram
• Refer to page 4-5, 4-6 for waveforms.

RD-50 BOARD(21/22)

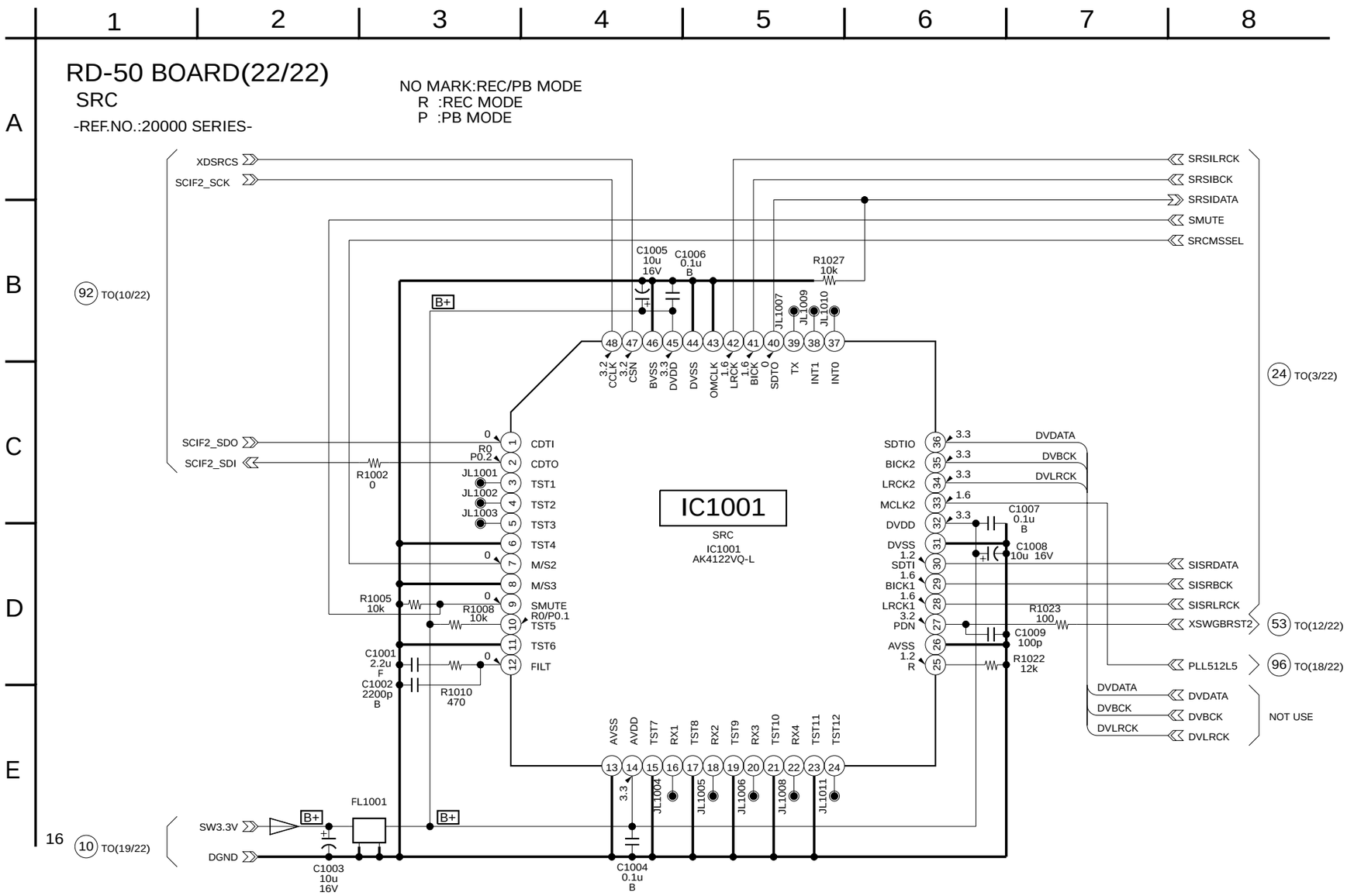
DV INTERFACE

-REF.NO.:20000 SERIES-



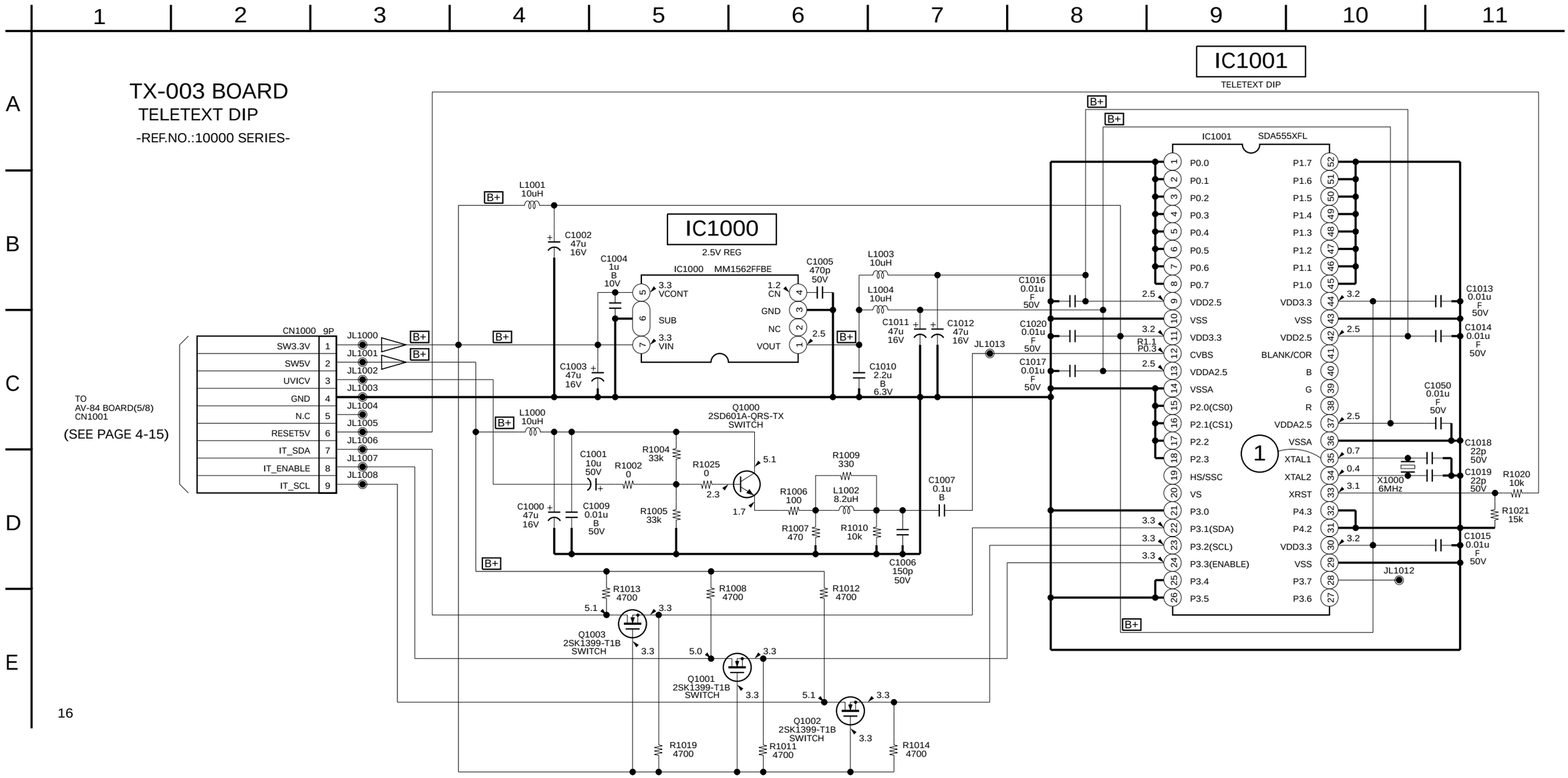
SIGNAL PATH

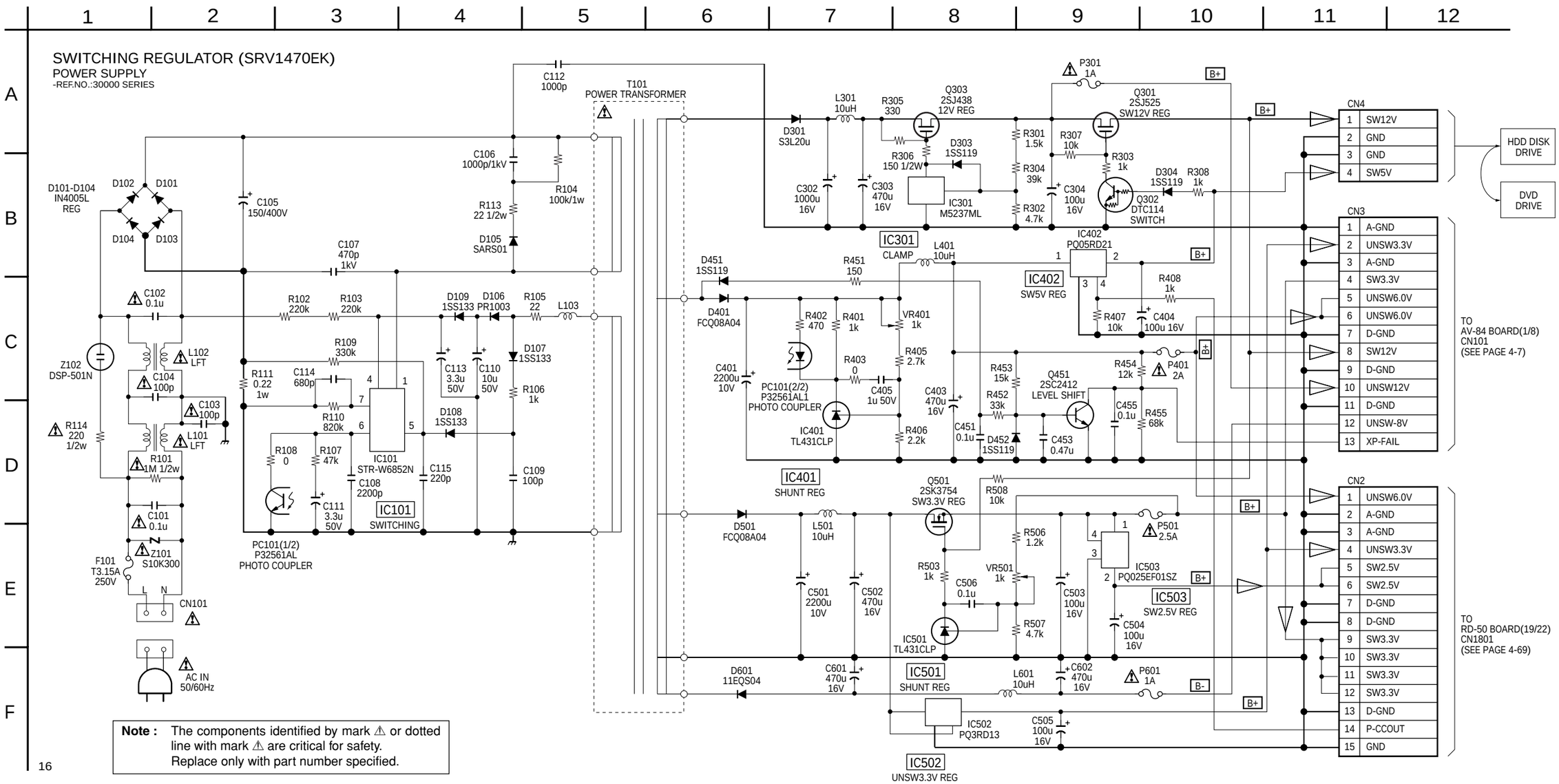
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	⇨
PB			⇨	⇦


RD-50 BOARD(22/22)
SRC
-REF.NO.:20000 SERIES-
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC1001
SRC
IC1001
AK4122VQ-L
XDSRCS
SCIF2_SCK
SCIF2_SDO
SCIF2_SDI
92 TO(10/22)
SRSILRCK
SRSIBCK
SRSIDATA
SMUTE
SRCMSSEL
24 TO(3/22)
C1005 10u 16V
C1006 0.1u B
R1027 10k
B+
JL1007
JL1009
JL1010
48 47 46 45 44 43 42 41 40 39 38 37
3.2 CCLK
3.2 CSN
BVSS
3.3 DVDD
DVSS
OMCLK
1.6 LRCK
1.6 BICK
0 SDTO
TX
INT1
INT0
R1002 0
R0 P0.2
JL1001
JL1002
JL1003
R1005 10k
R1008 10k
C1001 2.2u F
C1002 2200p B
R1010 470
1 CDTI
2 CDTO
3 TST1
4 TST2
5 TST3
6 TST4
7 M/S2
8 M/S3
9 SMUTE
10 R0/P0.1 TST5
11 TST6
12 FILT
SDTIO 36 3.3 DVDATA
BICK2 35 3.3 DVBCK
LRCK2 34 3.3 DVLRCK
MCLK2 33 1.6
DVDD 32 3.3
DVSS 31
SDTI 30 1.2
BICK1 29 1.6
LRCK1 28 1.6
PDN 27 3.2
AVSS 26 1.2
R 25
C1007 0.1u B
C1008 10u 16V
C1009 100p
R1022 12k
R1023 100
SISRDATA
SISRBCK
SISRLRCK
XSWGBRST2
53 TO(12/22)
PLL512L5
96 TO(18/22)
DVDATA
DVBCK
DVLRCK
NOT USE
AVSS AVDD TST7 RX1 TST8 RX2 TST9 RX3 TST10 RX4 TST11 TST12
13 14 15 16 17 18 19 20 21 22 23 24
3.3
JL1004 JL1005 JL1006 JL1008 JL1011
FL1001
SW3.3V
DGND
16 10 TO(19/22)
C1003 10u 16V
C1004 0.1u B

For Schematic Diagram
• Refer to page 4-6 for waveforms.

TX-003 BOARD
TELETEXT DIP
-REF.NO.:10000 SERIES-





Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

SECTION 5
IC PIN FUNCTION DESCRIPTION

5-1. IT CONTROL IC (IC603: M603H2MC-511FPUO (AV-84 BOARD))

Pin No.	Pin Name	I/O	Function
1	TU_S/B_D	I	Tuner Stereo detection L: Stereo
2	SIRCS IN	I	Remote control signal input
3	JUSTCLK	I	Timer pulse input Fixed to digital GND
4	AV_LINK_IN	I	Not used
5	CSYNC	I	Composite sync signal input
6	FAN_DET	I	Fan rotation control at power ON, L: Fan rotating, H: Fan stopped
7	BYTE	–	Fixed to digital GND
8	CNVSS		Connected to VCC when the FLASH is overwritten
9	XCIN	I	32KHz oscillator input
10	XCOUT	O	32KHz oscillator output
11	XRESET	I	Reset signal input
12	XOUT	O	10 MHz oscillator output
13	VSS	–	Digital GND
14	XIN	I	10 MHz oscillator input
15	VCC	–	Analog power 6 V
16	XNMI	I	Analog power 6 V
17	SYNC_V	I	V sync signal detection
18	IT_REQ	I	Signal input for communication request from HOSTIC
19	SLICEON_IN	I	Signal input during slicer operation
20	N.C.	O	Fixed to digital GND
21	LED DIMMER	O	Signal output for LED dimmer pulse
22	AREA1	I	Destination input 1
23	BUZZER	O	Fixed to digital GND
24	N.C.	–	Fixed to digital GND
25	STB_CNT	–	Fixed to digital GND
26	AREA0	I	Destination input 0
27	AV_LINK_OUT	O	Fixed to digital GND
28	TXT_SCL	–	Fixed to digital GND
29	TXT_SDA	–	Fixed to digital GND
30	VSS2	–	Fixed to digital GND
31	LP2	O	Filter signal output 1 (For Fsc)
32	LP3	–	Filter signal output
33	LP4	O	Filter signal output 1 (For PDC)
34	VDD2	–	Backup power 5 V
35	M2	–	
36	M1	–	Fixed to digital GND
37	SLICEON	O	Slicer operation detection H: Operating
38	ITSOUT	O	Data signal output (HOST / overwriting FLASH by dedicated writer)
39	ITSIN	I	Data signal input (HOST / overwriting FLASH by dedicated writer)
40	ITSCLK	O	Clock signal output for host communication
41	H/B	I	DVD/HDD judge signal input
42	FLD_DATA	O	SO signal output for FLD
43	FLD_IN	I	Fixed to digital GND
44	FLD_CLK	O	SCLK signal output for FLD
45	EPG SW1	–	
46	EPG SW2	–	
47	LED_STB	O	Strobe signal output for FLD drive
48	FL_PCONT	O	Power control signal output of D/DCONV for FLD H: ON, L: OFF
49	FLD_XRESET	O	Reset signal output for FLD drive H: NORMAL, L: RESET
50	FLD_CS	O	Chip select signal output for FLD drive

Pin No.	Pin Name	I/O	Function
51	TXT_EN	O	
52	SYNC_C_SW	O	Fixed to digital GND
53	SYNC_S/V_SW	O	LIS/V switching signal while waiting for synchronized recording Analog power 6 V
54	TU_FMONO	O	Forced monaural signal output / clock adjustment 1 KHz output
55	RESET_5V	O	RESET 5 V signal output
56	IT_XRESET	O	Reset signal output to HOST (SH)
57	TU_SCL	O	IIC clock output for tuner
58	TU_SDA	I/O	IIC data input/output for tuner
59	EEP_XWP	O	EEPROM write-protect output L: Write-protected
60	EEP_SCL	O	IIC clock output for EEPROM
61	EEP_SDA	I/O	IIC data input/output for EEPROM
62	XMENTMUTE	–	
63	N.C.	–	Fixed to digital GND
64	BS_BIT_SW	I	BSBIT output terminal cable presence/absence detection Fixed to digital GND
65	BS_DEC_SW	–	Decoder connection detection H: DVD, L: Tuner Fixed to digital GND
66	BS_COR_DET	I	BSCOR detection Fixed to digital GND
67	BS_VOL_DET	I	BSVOL detection Fixed to digital GND
68	BS_CONV_CONT	O	BSCONV control Fixed to digital GND
69	VCC	–	Connect to 6 V power Fixed to digital GND
70	BS_BST_CONT	O	Fixed to digital GND
71	VSS	–	Digital GND
72	H_DET	I	H sync detection H: INSEL, L: With output video signal
73	DSEL	O	D terminal output progressive / interlace switching Fixed to digital GND
74	SYNC_POW	O	Sync detection circuit power control
75	YC_SEP_ON	O	S terminal/composite input detection H: Composite, L: S-video
76	S2SW	I	Front L2S Input detection
77	SYNCRO_DET	O	Sync detection output
78	XP_MUTE	O	
79	MAIN/SAP	O	Tuner selection output H: SAP, L: MAIN
80	ERINT	I	
81	N.C.	–	Fixed to digital GND
82	P_FAIL	I	Power failure monitor detection input
83	SAP_DET	O	Tuner Bilingual output L: Bilingual
84	AUTO_PRESET	O	Tuner auto preset output H: Auto preset
85	TA_MUTE	O	Tuner audio mute signal output
86	TU_PCONT	O	Tuner output control
87	TU_V_DET	I	Tuner V sync detection
88	INSEL1	O	Input switching (Fixed to Line1 input)
89	INSEL2	O	Input switching (Fixed to Line1 input)
90	INSEL_TU	O	Input switching (Fixed to Line1 input)
91	FAN_SPEED	O	Fan high speed rotation detection H: Initial rotation, L: Low speed rotation
92	FAN_ONOFF	O	Fan ON/OFF signal output H: ON, L: OFF
93	N.C.	–	Fixed to digital GND
94	N.C.	–	Fixed to digital GND
95	WIDE	O	D terminal aspect output (Set to 4 : 3)
96	OND0	I	Drive temperature detection input
97	KEY1	I	AD key input 1
98	KEY2	I	AD key input 2
99	KEY3	I	AD key input 3
100	KEY4	I	AD key input 4

Pin No.	Pin Name	I/O	Function
101	KEY5	–	Not used
102	BS_C/N_DET	I	BSC / N detection (MAX: 2.9 V normal signal: 2.2 V)
103	AVSS	–	Analog GND
104	TU_GAIN_MAX	I	Tuner AGC input
105	VREF	–	Analog power 5 V
106	AVCC	–	Analog power 6 V
107	INSEL_C	–	Not used
108	VDD1	–	Digital power 6 V
109	SYNCIN	I	Sync signal detection input
110	SVREF	I	Sync signal slice reference potential input
111	VSS1	–	Digital GND
112	VDD3	–	Analog power 5 V
113	CVIN1	I	Component video signal input
114	VSS3	–	Analog GND
115	FSCIN	I	Fsc input
116	TU_AFT	I	Tuner AFT input

MEMO

SECTION 6
SERVICE MODE

This is the diagnostics to define the faulty position.
The diagnostics can be executed using the remote commander (Remote Control Mode 3) and monitor.
To execute the service mode, connect the VIDEO OUT (L2 OUT) connector to the monitor.
Connect the AC power cord to the power outlet.
A message, “WELCOME” appears on the display panel of the main unit.
Keep holding down the “REC PAUSE”, “SYSTEM MENU” and “TOOLS” keys, of the main unit (about 10 seconds) until the screen appears on the monitor display.
Either “OK” or “NG” appears on the monitor screen while the diagnostics is in progress.
You can judge the respective device or its peripheral from the message of either “OK” or “NG” on the monitor screen.
When an abnormality is detected, the diagnostics is stopped at that moment and you can select to proceed the diagnostics or to stop it.
Use the keys on the front panel of the main unit to operate the diagnostics.

6-1. Checking Item

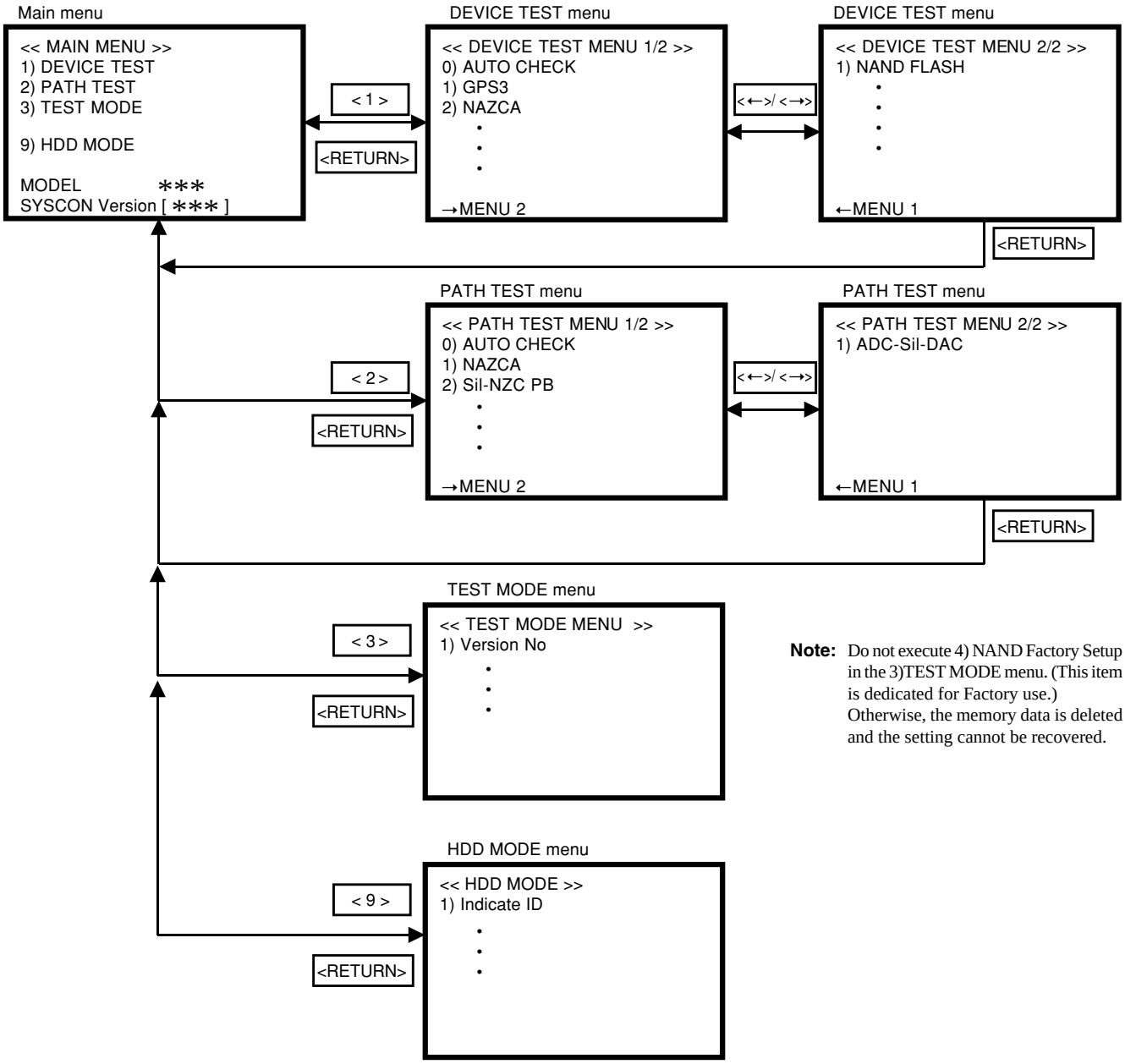
Checking item	IC name	REF
GPS 3	IC CXD9778R	IC501
NAZCA	IC CXD4701GB	IC1301
AUDY	IC CXD9722ATQ	IC1501
SILVIA	IC CXD9779R	IC803
VIDEO DEC	IC TVP5146 (Euro) IC TVP 5147 (U/C)	IC702
AV ENC	IC UPD61052GD	IC901
MR	IC CXD9777GG	IC1101
AV DEC	IC CXD1935Q	IC1202
EEPROM	IC CAT24WC32W	IC111
NAND FLASH	IC K9F2808U0C	IC402
SRC	IC AK4122	IC1001
DV	IC UPD728938BGD	IC2102

All parts are mounted on the RD-50 assembly board.

Note: Do not execute 4) NAND Factory Setup in the 3)TEST MODE menu. (This item is dedicated for Factory use.)
Otherwise, the memory data is deleted and the setting cannot be recovered.

When NG is displayed as the result of the DEVICE TEST, the IC or its peripheral is defective. When NG is displayed on the PATH TEST, defect exists in between ICs.

6-2. Screen Transition in the Service Mode



Note: Do not execute 4) NAND Factory Setup in the 3)TEST MODE menu. (This item is dedicated for Factory use.) Otherwise, the memory data is deleted and the setting cannot be recovered.

6-3. Service Mode Menu Items and Description

1) When the key “1” is pressed down, the monitor display moves to the device check menu screen.
2) When the key “2” is pressed down, the monitor display moves to the path check menu screen between deivces.
3) When the key “3” is pressed down, the monitor display moves to the version check screen.
4) When the key “9” is pressed down, the monitor display moves to the hard disk check screen.

```
<< MAIN MENU >>
1) DEVICE TEST
2) PATH   TEST
3) TEST   MODE

9) HDD  MODE
MODEL              ***
SYSCON Version  [ *** ]
```

6-4. Device Check Menu (1/2)

0) When the key “0” is pressed down, all devices are checked automatically.
1) When the key “1” is pressed down, the GPS3 device check will be executed.
2) When the key “2” is pressed down, the NAZCA device check will be executed.
3) When the key “3” is pressed down, the AUDY device check will be executed.
4) When the key “4” is pressed down, SILVIA device check will be executed.
5) When the key “5” is pressed down, the VIDEO DEC device check will be executed .
6) When the key “6” is pressed down, the AV ENC device check will be executed.
7) When the key “7” is pressed down, the MR device check will be executed.
8) When the key “8” is pressed down, the AV DEC device check will be executed.
9) When the key “9” is pressed down, the EEPROM device check will be executed.
10) When the key “→” is pressed down, the monitor display moves to the next device check screen.

```
<< DEVICE  TEST MENU 1/2 >>
0)  AUTO CHECK
1)  GPS3
2)  NAZCA
3)  AUDY
4)  SILVIA
5)  VIDEO DEC
6)  AV ENC
7)  MR
8)  AV DEC
9)  EEPROM


→ MENU 2
```

6-5. Device Check Menu (2/2)

1) When the key “1” is pressed down, the NAND FLASH device check will be executed.
2) Key “2” is not used.
   (In some cases, the message “NG” appears. But this equipment is normal and does not have any problem.)
3) Key “3” is not used.
   (In some cases, the message “NG” appears. But this equipment is normal and does not have any problem.)
4) When the key “6” is pressed down, the SRC device check will be executed.
5) When the key “7” is pressed down, the DV device check will be executed.
6) When the key “←” is pressed down, the monitor display returns to the previous device check menu screen.

```
<< DEVICE  TEST MENU 2/2 >>
1)  NAND FLASH
2)  DVD DRIVE ← Not used
3)  HDD DRIVE ← Not used


6)  SRC
7)  DV



← MENU 1
```

6-6. Path Check Menu (1/2)

1) When the key "0" is pressed down, the path check is automatically executed.
2) When the key "1" is pressed down, the NAZCA path check is executed.
3) When the key "2" is pressed down, the path check of PB between Sil to NZC will be executed.
4) When the key "3" is pressed down, the path check of EE between Sil to NZC will be executed.
5) When the key "4" is pressed down, the path check from Sil to AVENC(V) will be executed.
6) When the key "5" is pressed down, the path check of EE between VDEC to Sil will be executed. The video signal of input1 is output. (The screen is black when there is no input.) Confirm it is working normally, and press the ENTER key. The sign, "OK" appears.
7) When the key "6" is pressed down, the path check between AVENC to MR will be executed.
8) When the key "7" is pressed down, the path check between MR to AVEDEC will be executed.
9) When the key "8" is pressed down, the path check of Sil to ReEnc will be executed.
10) When the key "→" is pressed down, the monitor display moves to the next path check menu screen.

```
<< PATH   TEST MENU 1/2 >>
0)  AUTO CHECK
1)  NAZCA
2)  Sil – NZC PB
3)  Sil – NZC EE
4)  Sil – AVENC (V)
5)  VDEC – Sil EE
6)  AVENC – MR
7)  MR – AVDEC
8)  Sil ReEnc

→ MENU 2
```

6-7. Path Check Menu (2/2)

1) When the key "1" is pressed down, the path check among ADC to Sil to DAC will be executed.
2) When the key "←" is pressed down, the monitor display moves to the previous path check menu screen.

```
<< PATH   TEST MENU 2/2 >>
1)  ADC – Sil – DAC




←MENU 1
```

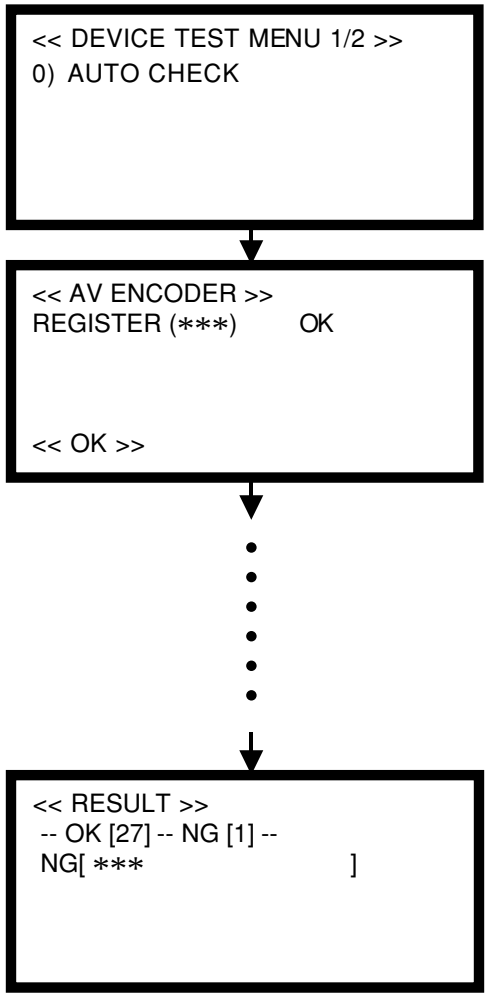
6-8. Hard Disk Check Menu

1) When the key "1" is pressed down, the ID check will be executed.
2) When the key "2" is pressed down, performance check will be executed.
3) When the key "3" is pressed down, WRITE ID will be executed.
4) When the key "4" is pressed down, Format will be executed.
5) When the key "9" is pressed down, Factory check will be executed.
6) When the "RETURN" key is pressed, the monitor display moves to the menu screen.

```
<< HDD MODE >>
1)  Indicate ID
2)  Performance Check
3)  Write ID
4)  Format
9)  Factory Check
```

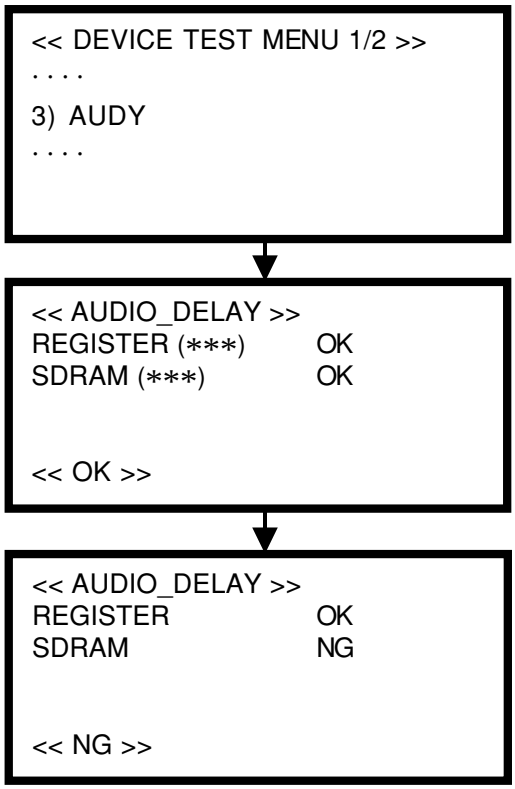
6-9. Device AUTO Check Screen Transition

1) Select the item of AUTO CHECK from menu.
2) Device check is executed automatically, from no.1 in numeric order.
3) When all devices are checked, number of OK/NG items and names of the NG devices are displayed as the RESULT.
4) When the "RETURN" key on the remote commander is pressed, the monitor display returns to the menu screen.



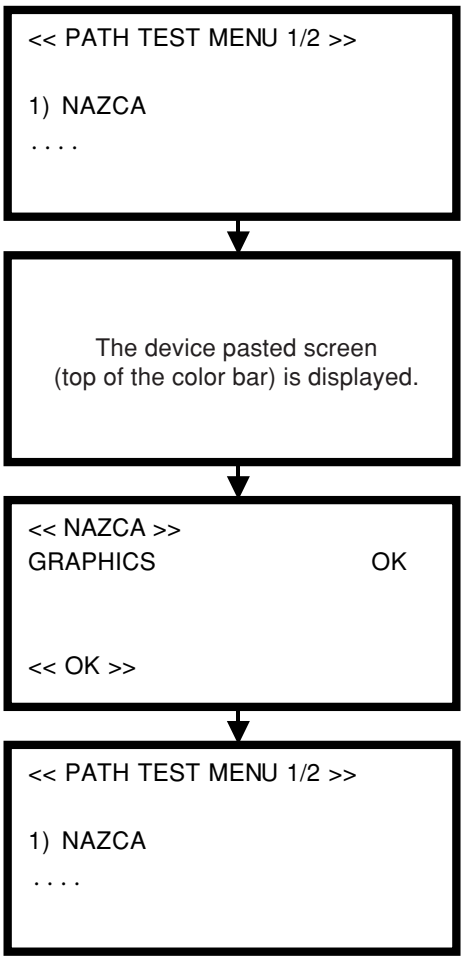
6-10. Device Individual Check, Screen Transition

1) Select the AUDY item from the menu.
2) Perform the register read/write that is the first of the check item and its result is displayed.
3) Perform the SDRAM check that is the second item of the check item and its result is displayed.
4) When check results of all items are OK, the message OK is displayed. If any one of the check items is found NG, the message NG is displayed.
5) When the "RETURN" key is pressed, the monitor display moves to the menu screen.



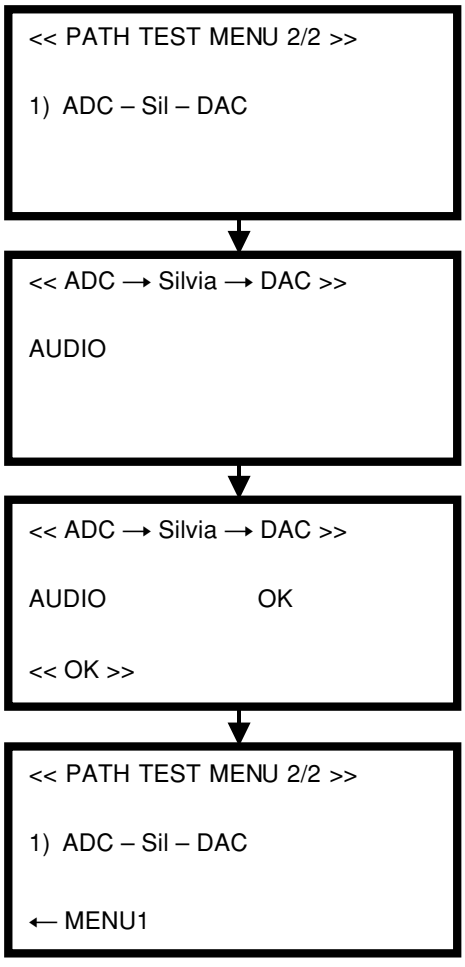
6-11. Path Individual Check (Pasted Screen Check (visual check) and data check (digital video data auto-check)) Screen Transition

1) Select the NAZCA item from the menu.
2) The device pasted screen (top of the color bar) is displayed. (When visual check is required, the display does not move to the judgment screen but remains displaying the picture.)
3) When the "ENTER" key is pressed, the monitor display moves to the judgment screen.
4) When the "RETURN" key is pressed on the judgment screen, the monitor display moves to the menu screen.



6-12. Path Individual Check (Audio output Confirmation) Screen Transition

1) Select the check item, ADC to Sil to DAC from the menu.
2) The path check is executed and result of judgment is displayed. It is O.K. when the sound comes out from the input1.
3) When the "RETURN" key is pressed on the judgment screen again, the monitor display moves to the menu screen.



SECTION 7
ADJUSTMENT

7-1. Video System Adjustment

Preparing for Adjustment

1. Equipments

• Oscilloscope
• Reference Disk
HLX-507 (PAL single layer disk) J-6090-077-A
HLX-506 (PAL dual layer disk) J-6090-078-A

1. Videl Levl Adjustment (RD-50 Board)

<Purpose>

This adjustment is made to satisfy the PAL standard, If it is adjusted incorrectly, brightness will be too bright or too dark.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (terminated in 75 Ω)
Instrument	Oscilloscope
Adjusting element	RV001
Specification	1.0 Vp-p

Adjusting method:

1) Insert the reference disk and play back the 100% color bars.
2) Adjust RV001 for 1.0 Vp-p.

Fig. 7-1.

2. S-Video Output S-Y Check

<Purpose>

This check confirms that the S-video output. If it adjusted incorrectly, color will be to dark or too thin.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (terminated in 75 Ω)
Instrument	Oscilloscope
Specification	1.0 ± 0.06Vp-p

Adjusting method:

1) Insert the reference disk and play back the 100% color bars.
2) Confirm that the S-Y level is 1.0 ± 0.06 Vp-p.

Fig. 7-2.

3. S-Video Output S-C Level Check

<Purpose>

This check confirms that the S-video output S-C conforms to the PAL standard. If it is adjusted incorrectly, color will be too dark or too thin.

Mode	Video level adjustment in test mode.
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (terminated in 75 Ω)
Instrument	Oscilloscope
Specification	300 ± 30mVp-p

Adjustment method :

1) Insert the reference disk and play back the 100% color bars.
2) Confirm that the burst signal level of S-C is 300 ± 30 mVp-p.

Fig. 7-3.

4. Component Video Output Y Check

<Purpose>

This check confirms that the Y signal output is correct. If this signal level is not correct, brightness of the video signal will be too bright or too dark when the COMPONENT connector output signal is connected to the projector having COMPONENT input.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector, D1/D2 VIDEO OUT connector, pin-① (terminated in 75 Ω)
Instrument	Oscilloscope
Specification	1.0 ± 0.06Vp-p

Adjustment method:

1) Insert the reference disk and play back the 100% color bars.
2) Check that the Y level is 1.0 ± 0.06 Vp-p.

Fig. 7-4.

5. Component Video Output B-Y Chec

<Purpose>

This check confirms that the B-Y signal of the component video output is correct. If this signal level is not correct, color of the video signal will have different color when the COMPONENT connector output signal is connected to the projector having COMPONENT input.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (PB/CB) terminal (terminated in 75 Ω)
Instrument	Oscilloscope
Specification	700 ± 50mVp-p

Adjustment method:

1) Insert the reference disk and play back the 100% color bars.
2) Confirm that the B-Y level is 700 ± 50 mVp-p.

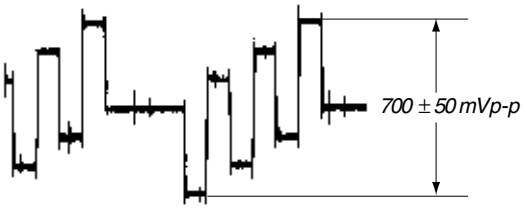


Fig. 7-5.

6. Component Video Output R-Y Check

<Purpose>

This check confirms that the R-Y signal of the component video output is correct. If this signal level is not correct, color of the video signal will have different color when the COMPONENT connector output signal is connected to the projector having COMPONENT input.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (PR/CR) connector (terminated in 75 Ω)
Instrument	Oscilloscope
Specification	700 ± 50mVp-p

Adjustment method:

1) Insert the reference disk and play back the 100% color bars.
2) Confirm that the R-Y level is 700 ± 50 mVp-p.

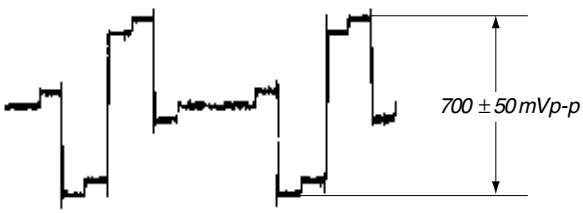


Fig. 7-6.

SECTION 8
REPAIR PARTS LIST

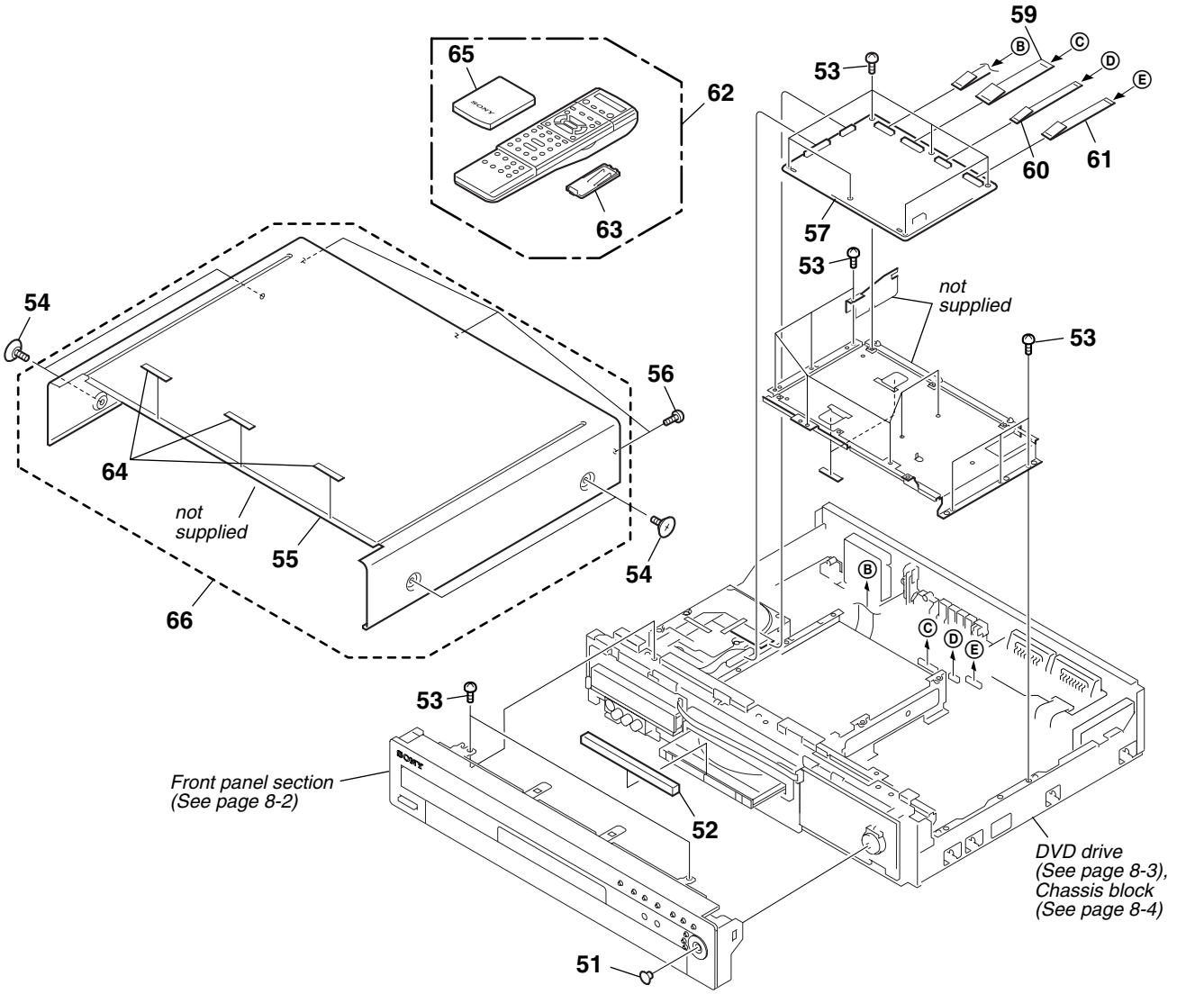
8-1. EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

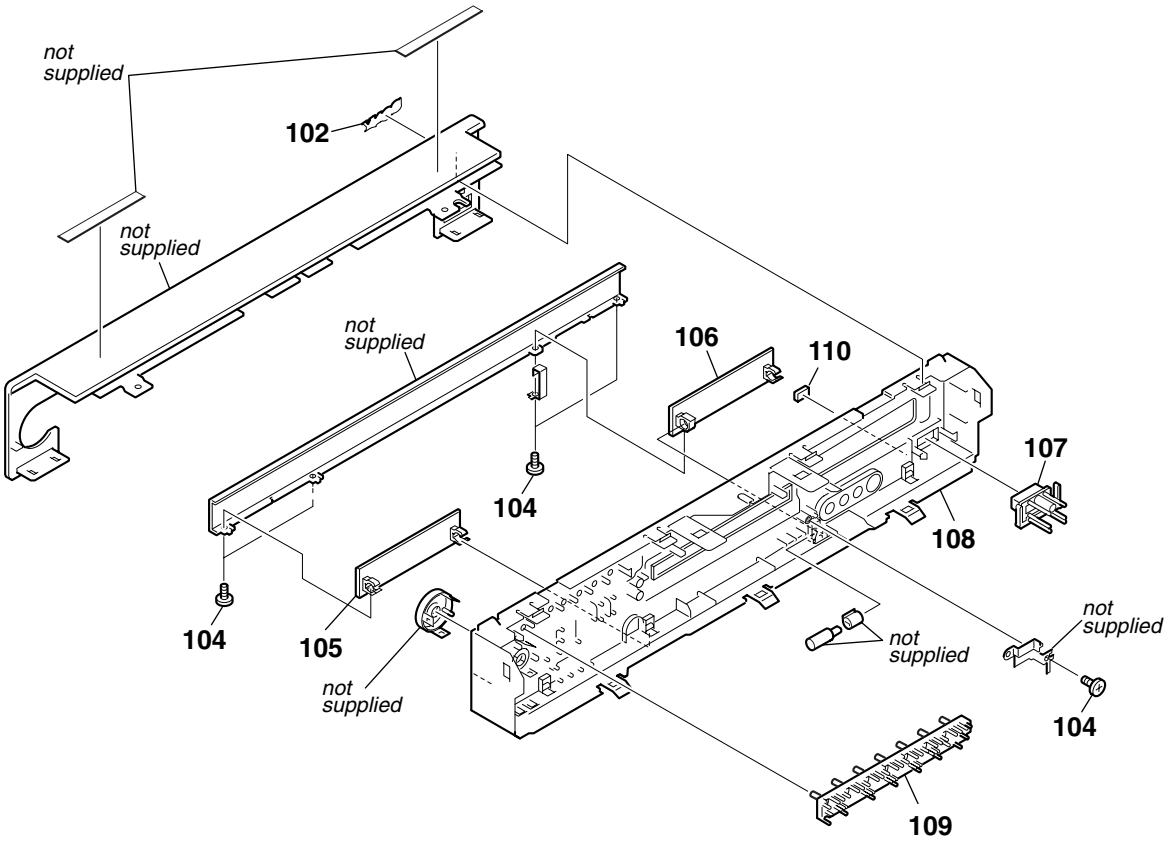
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

8-1-1. OVERALL SECTION



Ref. No.	Part No.	Description	Remarks
51	3-090-233-01	KNOB, CURSOR (AEP:SILVER/UK)	
51	3-090-233-21	KNOB, CURSOR (AEP:BLACK)	
52	3-087-079-01	COVER, TRAY	
53	3-077-331-01	+BV3 (3-CR)	
54	3-070-883-21	SCREW, TAPPING (AEP:SILVER/UK)	
54	3-070-883-31	SCREW, TAPPING (AEP:BLACK)	
55	A-1061-574-A	CASE, UPPER ASSY (AEP:SILVER/UK)	
55	A-1061-585-A	CASE, UPPER ASSY (AEP:BLACK)	
56	3-077-331-31	+BV3 (3-CR)	
O 57	A-1070-805-A	RD-50 (EHKS) COMPL (UK)	
O 57	A-1070-806-A	RD-50 (EHCS) COMPL (AEP)	
59	1-827-794-11	CABLE, FLEXIBLE FLAT (FRA-6)	
60	1-829-256-11	CABLE, FLEXIBLE FLAT (FRA-5)	
61	1-829-221-11	CABLE, FLEXIBLE FLAT (FRA-7)	
62	1-478-723-11	REMOTE COMMANDER (RMT-D206P)	
63	3-071-119-91	LID,BATTERY (FOR RMT-D206P)	
64	3-089-200-01	SHEET, CASE	
65	3-087-256-41	DOOR,SLIDE (FOR RMT-D206P)	
66	A-1061-574-A	CASE ASSY,UPPER (SERVICE) (AEP:SILVER/UK)	
66	A-1061-585-A	CASE ASSY,UPPER (SERVICE) (AEP:BLACK)	

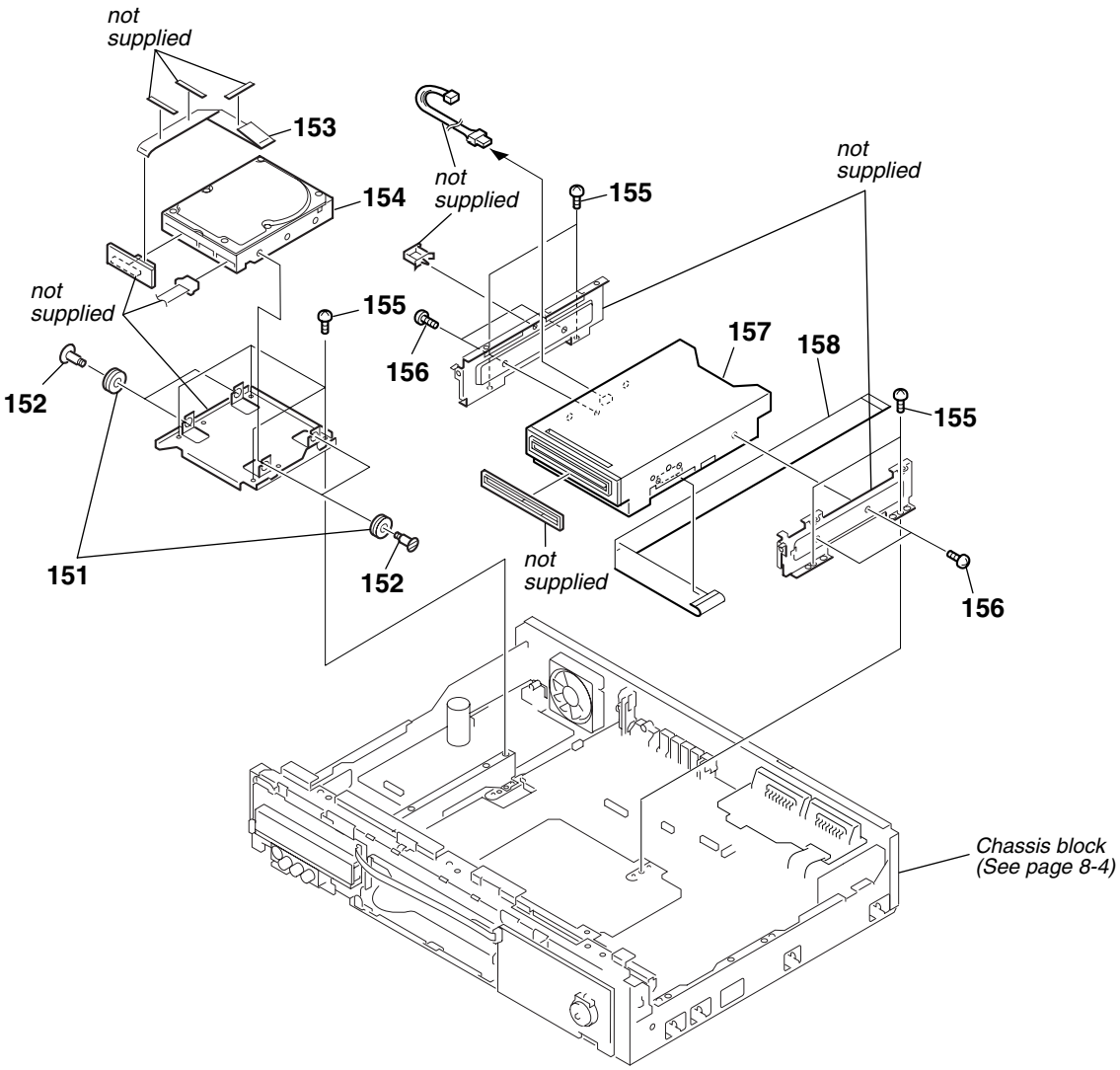
8-1-2. FRONT PANEL SECTION



Ref. No.	Part No.	Description	Remarks
102	4-942-568-61	EMBLEM (NO.5), SONY (AEP:SILVER/UK)	
104	4-921-277-51	SCREW (B2.6), TAPPING, BIND (AEP:SILVER/UK)	
104	2-177-814-01	SCREW (2.6 B CR), TAPPING, BIND (AEP:BLACK)	
105	3-087-074-01	SHAFT (A), FUNCTION DOOR (AEP:SILVER/UK)	
106	3-087-075-01	SHAFT (B), FUNCTION DOOR (AEP:SILVER/UK)	
107	3-087-068-01	BUTTON, POWER (AEP:SILVER/UK)	

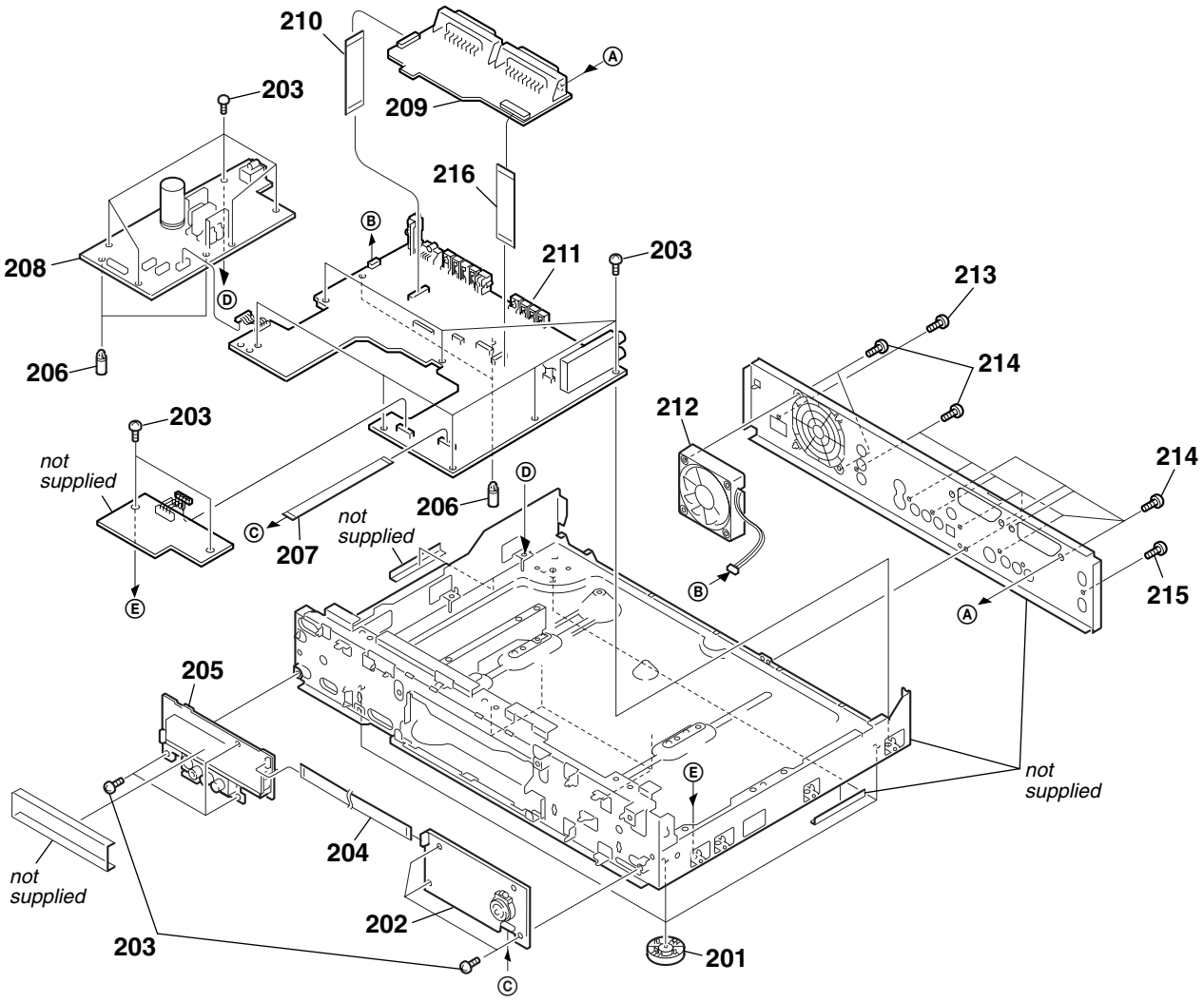
Ref. No.	Part No.	Description	Remarks
108	A-1059-444-A	PANEL BLOCK ASSY, FRONT(AEP:SILVER)	
108	A-1059-870-A	PANEL BLOCK ASSY, FRONT(AEP:BLACK)	
108	A-1059-875-A	PANEL BLOCK ASSY, FRONT(UK)	
109	X-3953-878-1	BUTTON ASSY, OPEN	
110	3-081-428-11	CUSHION, DOOR (AEP:SILVER/UK)	

8-1-3. DVD DRIVE



Ref. No.	Part No.	Description	Remarks
151	3-074-849-01	DAMPER (SY)	
152	3-087-178-01	SCREW, HDD	
153	1-829-222-11	CABLE, FLEXIBLE FLAT (FRH-2)	
154	A-1082-555-A	HDD(WD-XL80-2-160G)ASSY	
155	3-077-331-01	+BV3 (3-CR)	
156	3-088-023-01	+B3 (3-CR)	
157	8-457-599-50	DRIVE, DVD DW-U15A-S2	
158	1-827-795-11	CABLE, FLEXIBLE FLAT (FRD-3)	

8-1-4. CHASSIS BLOCK



Ref. No.	Part No.	Description	Remarks
201	X-3953-877-1	FOOT ASSY	
O 202	A-1058-970-A	FR-215 (EH) COMPL	
203	3-077-331-01	+BV3 (3-CR)	
204	1-827-798-11	CABLE, FLEXIBLE FLAT (FLR-4)	
O 205	A-1058-957-A	FL-140 (EH) COMPL	
O 206	4-958-674-31	SPACER, MINIATURE CARD	
207	1-827-797-11	CABLE, FLEXIBLE FLAT (FAR-4)	
⚠208	1-468-843-11	POWER BLOCK	

Ref. No.	Part No.	Description	Remarks
O 209	A-1056-838-A	ER-25 COMPL	
210	1-829-223-11	CABLE, FLEXIBLE FLAT (FAE-13)	
O 211	A-1058-955-A	AV-84 (EH) COMPL	
212	1-787-118-11	FAN, D.C.	
213	3-088-022-01	+P3 (B TYPE) (3-CR)	
214	3-077-331-31	+BV3 (3-CR)	
215	3-088-023-01	+B3 (3-CR)	
216	1-829-224-11	CABLE, FLEXIBLE FLAT (FAE-14)	

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

8-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- COILS
  uH: µH
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
0	A-1058-955-A	AV-84 (EH) COMPL			
		**********			
		< CAPACITOR >			
C103	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C104	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C105	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C108	1-127-573-11	CERAMIC CHIP	1uF	10% 16V	
C112	1-162-970-11	CERAMIC CHIP	0.01uF	10.00% 25V	
C113	1-126-947-11	ELECT	47uF	20.00% 16V	
C116	1-162-970-11	CERAMIC CHIP	0.01uF	10.00% 25V	
C117	1-127-573-11	CERAMIC CHIP	1uF	10% 16V	
C201	1-126-960-11	ELECT	1uF	20.00% 50V	
C202	1-126-947-11	ELECT	47uF	20.00% 16V	
C203	1-126-947-11	ELECT	47uF	20.00% 16V	
C204	1-126-960-11	ELECT	1uF	20.00% 50V	
C205	1-107-714-11	ELECT	10uF	20.00% 16V	
C206	1-126-963-11	ELECT	4.7uF	20.00% 50V	
C207	1-126-960-11	ELECT	1uF	20.00% 50V	
C208	1-126-963-11	ELECT	4.7uF	20.00% 50V	
C209	1-126-947-11	ELECT	47uF	20.00% 16V	
C210	1-126-947-11	ELECT	47uF	20.00% 16V	
C211	1-162-970-11	CERAMIC CHIP	0.01uF	10.00% 25V	
C212	1-126-947-11	ELECT	47uF	20.00% 16V	
C213	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C214	1-126-960-11	ELECT	1uF	20.00% 50V	
C215	1-126-961-11	ELECT	2.2uF	20.00% 50V	
C216	1-162-970-11	CERAMIC CHIP	0.01uF	10.00% 25V	
C217	1-107-714-11	ELECT	10uF	20.00% 16V	
C218	1-126-947-11	ELECT	47uF	20.00% 16V	
C219	1-162-970-11	CERAMIC CHIP	0.01uF	10.00% 25V	
C301	1-126-947-11	ELECT	47uF	20.00% 16V	
C302	1-126-947-11	ELECT	47uF	20.00% 16V	
C304	1-126-947-11	ELECT	47uF	20.00% 16V	
C306	1-126-947-11	ELECT	47uF	20.00% 16V	
C307	1-162-970-11	CERAMIC CHIP	0.01uF	10.00% 25V	
C308	1-162-970-11	CERAMIC CHIP	0.01uF	10.00% 25V	
C309	1-126-947-11	ELECT	47uF	20.00% 16V	
C310	1-164-217-11	CERAMIC CHIP	150PF	5.00% 50V	
C311	1-164-217-11	CERAMIC CHIP	150PF	5.00% 50V	
C312	1-164-739-11	CERAMIC CHIP	560PF	5.00% 50V	
C313	1-164-739-11	CERAMIC CHIP	560PF	5.00% 50V	
C314	1-164-218-11	CERAMIC CHIP	180PF	5.00% 50V	
C315	1-164-218-11	CERAMIC CHIP	180PF	5.00% 50V	
C316	1-126-947-11	ELECT	47uF	20.00% 16V	
C317	1-126-947-11	ELECT	47uF	20.00% 16V	
C318	1-126-934-11	ELECT	220uF	20.00% 16V	
C319	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C320	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C321	1-126-960-11	ELECT	1uF	20.00% 50V	
C322	1-126-960-11	ELECT	1uF	20.00% 50V	
C324	1-126-947-11	ELECT	47uF	20.00% 16V	
C326	1-162-927-11	CERAMIC CHIP	100PF	5.00% 50V	
C327	1-162-927-11	CERAMIC CHIP	100PF	5.00% 50V	
C328	1-126-947-11	ELECT	47uF	20.00% 16V	
C333	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C403	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C404	1-127-573-11	CERAMIC CHIP	1uF	10% 16V	
C405	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C408	1-126-947-11	ELECT	47uF	20.00% 16V	
C413	1-126-947-11	ELECT	47uF	20.00% 16V	
C414	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C415	1-125-838-11	CERAMIC CHIP	2.2uF	10% 6.3V	
C416	1-164-227-11	CERAMIC CHIP	0.022uF	10.00% 25V	
C417	1-162-964-11	CERAMIC CHIP	0.001uF	10.00% 50V	
C418	1-162-968-11	CERAMIC CHIP	0.0047uF	10.00% 50V	
C419	1-162-966-11	CERAMIC CHIP	0.0022uF	10.00% 50V	
C423	1-164-230-11	CERAMIC CHIP	220PF	5.00% 50V	
C424	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C425	1-164-230-11	CERAMIC CHIP	220PF	5.00% 50V	
C426	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C427	1-126-947-11	ELECT	47uF	20.00% 16V	
C428	1-126-947-11	ELECT	47uF	20.00% 16V	
C429	1-115-339-11	CERAMIC CHIP	0.1uF	10.00% 50V	
C430	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C431	1-126-947-11	ELECT	47uF	20.00% 16V	
C432	1-126-916-11	ELECT	1000uF	20.00% 6.3V	
C433	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C434	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C435	1-126-947-11	ELECT	47uF	20.00% 16V	
C436	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C437	1-126-964-11	ELECT	10uF	20.00% 50V	
C438	1-126-947-11	ELECT	47uF	20.00% 16V	
C439	1-115-339-11	CERAMIC CHIP	0.1uF	10.00% 50V	
C440	1-162-924-11	CERAMIC CHIP	56PF	5.00% 50V	
C441	1-162-915-11	CERAMIC CHIP	10PF	0.50PF 50V	
C442	1-162-909-11	CERAMIC CHIP	4PF	0.25PF 50V	
C443	1-126-964-11	ELECT	10uF	20.00% 50V	
C444	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	

Ref. No.	Part No.	Description			Remarks
C445	1-162-924-11	CERAMIC CHIP	56PF	5.00%	50V
C446	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V
C448	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C449	1-126-964-11	ELECT	10uF	20.00%	50V
C450	1-107-927-11	ELECT	3.3uF	20.00%	100V
C451	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C452	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C455	1-126-964-11	ELECT	10uF	20.00%	50V
C456	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C458	1-126-947-11	ELECT	47uF	20.00%	16V
C459	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C602	1-126-947-11	ELECT	47uF	20.00%	16V
C603	1-126-947-11	ELECT	47uF	20.00%	16V
C604	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C606	1-126-947-11	ELECT	47uF	20.00%	16V
C607	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C609	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C610	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C612	1-162-919-11	CERAMIC CHIP	22PF	5.00%	50V
C613	1-162-918-11	CERAMIC CHIP	18PF	5.00%	50V
C614	1-162-915-11	CERAMIC CHIP	10PF	0.50PF	50V
C615	1-162-915-11	CERAMIC CHIP	10PF	0.50PF	50V
C617	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V
C618	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C619	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C620	1-162-920-11	CERAMIC CHIP	27PF	5.00%	50V
C621	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C623	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C626	1-162-923-11	CERAMIC CHIP	47PF	5.00%	50V
C630	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C631	1-162-923-11	CERAMIC CHIP	47PF	5.00%	50V
C632	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C634	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C635	1-164-739-11	CERAMIC CHIP	560PF	5.00%	50V
C636	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C637	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C638	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C640	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C645	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C646	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C647	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C648	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C650	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C652	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C653	1-115-456-21	CAPACITOR	0.22F		5.5V
C659	1-162-920-11	CERAMIC CHIP	27PF	5.00%	50V
C663	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C664	1-162-923-11	CERAMIC CHIP	47PF	5.00%	50V
C666	1-126-947-11	ELECT	47uF	20.00%	16V
C668	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C701	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C702	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C704	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C705	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C706	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C708	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C709	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C710	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C711	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C712	1-126-947-11	ELECT	47uF	20.00%	16V

Ref. No.	Part No.	Description			Remarks
C713	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C714	1-165-908-11	CERAMIC CHIP	1uF	10%	10V
C715	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C716	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C717	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C718	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C719	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C720	1-126-947-11	ELECT	47uF	20.00%	16V
C721	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C722	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C723	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C724	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C727	1-126-947-11	ELECT	47uF	20.00%	16V
C728	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C732	1-162-923-11	CERAMIC CHIP	47PF	5.00%	50V
C733	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
C741	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V
C742	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V
C748	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C749	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C750	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C752	1-162-923-11	CERAMIC CHIP	47PF	5.00%	50V
C756	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C801	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C802	1-126-947-11	ELECT	47uF	20.00%	16V
C803	1-126-947-11	ELECT	47uF	20.00%	16V
C804	1-126-947-11	ELECT	47uF	20.00%	16V
C805	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C806	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C809	1-126-947-11	ELECT	47uF	20.00%	16V
C810	1-126-947-11	ELECT	47uF	20.00%	16V
C811	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C812	1-126-947-11	ELECT	47uF	20.00%	16V
C813	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C814	1-126-947-11	ELECT	47uF	20.00%	16V
C816	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
		< ONNECTOR >			
C1104	1-162-962-11	CERAMIC CHIP	470PF	10.00%	50V
CN101	1-778-317-11	CONNECTOR, BOARD TO BOARD 13P			
CN102	1-564-705-11	PIN, CONNECTOR (SMALL TYPE) 3P			
CN501	1-784-326-11	CONNECTOR, FFC/FPC 27P			
CN502	1-778-274-11	CONNECTOR, FFC/FPC 13P			
CN503	1-774-769-11	CONNECTOR, FFC/FPC 25P			
CN601	1-695-110-11	PIN, CONNECTOR (PC BOARD) 8P			
CN603	1-774-768-11	CONNECTOR, FFC/FPC 17P			
CN801	1-573-489-11	PIN, CONNECTOR (PC BOARD) 11P			
CN901	1-779-343-11	CONNECTOR, FFC/FPC 23P			
CN902	1-774-769-11	CONNECTOR, FFC/FPC 25P			
CN1001	1-816-339-21	CONNECTOR, BOARD TO BOARD 9P			
		< DIODE >			
D301	8-719-050-38	DIODE M1MA152WK-T1			
D405	8-719-081-97	DIODE MMDL914T1			
D408	8-719-988-61	DIODE 1SS355TE-17			
D409	8-719-988-61	DIODE 1SS355TE-17			
D602	8-719-075-77	DIODE EC10DA40-TE12			

Ref. No.	Part No.	Description	Remarks
D610	8-719-988-61	DIODE 1SS355TE-17	
D613	8-719-081-97	DIODE MMDL914T1	
D701	8-719-050-38	DIODE M1MA152WK-T1	
D801	8-719-050-37	DIODE M1MA152WA-T1	
D803	8-719-071-15	DIODE HZM6.8ZWA1TL	
D811	8-719-071-15	DIODE HZM6.8ZWA1TL	
D815	8-719-071-15	DIODE HZM6.8ZWA1TL	
D816	8-719-071-15	DIODE HZM6.8ZWA1TL	
		< FERRITE BEAD >	
FB601	1-414-813-11	FERRITE 0uH	
		< IC >	
IC101	6-705-308-01	IC SI-3010KM-TL	
IC103	6-705-338-01	IC TK11250CMCL-G	
IC201	6-703-503-01	IC AK5365VQ	
IC301	8-759-052-52	IC NJM78M05DL1A-TE1	
IC302	6-705-404-01	IC BA4558F-HTE2	
IC404	8-749-925-00	IC TK11819MTL	
IC405	6-702-714-01	IC MSP3417G-QG-B8V3	
IC602	8-759-679-19	IC S-24C04BFJ-TB	
IC603	6-804-565-01	IC M306H2FCFP-524U0	
IC604	6-702-879-01	IC R3112N281A-TR	
IC607	8-759-242-70	IC TC7WU04F(TE12R)	
IC701	6-705-005-01	IC LA73031V-TLM-E	
IC801	8-759-667-17	IC L79M05TLL-SONY-TL-E	
IC802	6-704-839-01	IC LA73056-TLM-E	
		< JACK >	
J802	1-817-402-11	PHONO JACK 3P	
		< UMPER RESIST0R >	
JS401	1-216-295-91	SHORT CHIP 0	
JS402	1-216-295-91	SHORT CHIP 0	
JS405	1-216-295-91	SHORT CHIP 0	
JS406	1-216-295-91	SHORT CHIP 0	
JS407	1-216-295-91	SHORT CHIP 0	
JS408	1-216-295-91	SHORT CHIP 0	
JS409	1-216-295-91	SHORT CHIP 0	
JS410	1-216-295-91	SHORT CHIP 0	
JS411	1-216-295-91	SHORT CHIP 0	
JS413	1-216-295-91	SHORT CHIP 0	
JS414	1-216-295-91	SHORT CHIP 0	
JS415	1-216-295-91	SHORT CHIP 0	
		< COIL >	
L201	1-414-187-11	INDUCTOR 47uH	
L402	1-414-187-11	INDUCTOR 47uH	
L403	1-469-967-21	INDUCTOR 10uH	
L405	1-469-967-21	INDUCTOR 10uH	
L406	1-414-858-31	INDUCTOR 1MH	
L407	1-414-187-11	INDUCTOR 47uH	
L408	1-414-187-11	INDUCTOR 47uH	
L409	1-414-187-11	INDUCTOR 47uH	
L410	1-469-967-21	INDUCTOR 10uH	
L411	1-414-187-11	INDUCTOR 47uH	

Ref. No.	Part No.	Description	Remarks
L601	1-412-533-21	INDUCTOR 47uH	
L602	1-412-533-21	INDUCTOR 47uH	
L701	1-469-967-21	INDUCTOR 10uH	
L703	1-412-951-11	INDUCTOR 10uH	
L704	1-412-951-11	INDUCTOR 10uH	
L801	1-400-145-21	INDUCTOR 47uH	
L802	1-400-145-21	INDUCTOR 47uH	
L803	1-412-060-11	INDUCTOR 22uH	
		< TRANSISTOR >	
Q101	8-729-421-19	TRANSISTOR MUN2213T1	
Q301	8-729-424-08	TRANSISTOR MUN2111T1	
Q302	8-729-921-73	TRANSISTOR 2SD1781K-T146-QR	
Q303	8-729-010-25	TRANSISTOR MSD601-RT1	
Q304	8-729-045-17	TRANSISTOR 2SB1561T100Q	
Q305	8-729-421-19	TRANSISTOR MUN2213T1	
Q306	8-729-421-19	TRANSISTOR MUN2213T1	
Q307	8-729-027-53	TRANSISTOR DTC124TKA-T146	
Q308	8-729-027-53	TRANSISTOR DTC124TKA-T146	
Q309	8-729-046-97	TRANSISTOR 2SD1938(F)-T(TX).SO	
Q310	8-729-046-97	TRANSISTOR 2SD1938(F)-T(TX).SO	
Q311	8-729-010-05	TRANSISTOR MSB709-RT1	
Q312	8-729-010-05	TRANSISTOR MSB709-RT1	
Q313	8-729-010-25	TRANSISTOR MSD601-RT1	
Q402	8-729-010-25	TRANSISTOR MSD601-RT1	
Q403	8-729-421-19	TRANSISTOR MUN2213T1	
Q406	8-729-010-25	TRANSISTOR MSD601-RT1	
Q407	8-729-010-25	TRANSISTOR MSD601-RT1	
Q408	8-729-010-05	TRANSISTOR MSB709-RT1	
Q409	8-729-010-25	TRANSISTOR MSD601-RT1	
Q410	8-729-421-22	TRANSISTOR MUN2211T1	
Q412	8-729-010-05	TRANSISTOR MSB709-RT1	
Q413	8-729-010-25	TRANSISTOR MSD601-RT1	
Q414	8-729-421-22	TRANSISTOR MUN2211T1	
Q415	8-729-045-17	TRANSISTOR 2SB1561T100Q	
Q416	8-729-010-05	TRANSISTOR MSB709-RT1	
Q420	8-729-010-25	TRANSISTOR MSD601-RT1	
Q601	8-729-010-05	TRANSISTOR MSB709-RT1	
Q602	8-729-010-25	TRANSISTOR MSD601-RT1	
Q603	8-729-421-22	TRANSISTOR MUN2211T1	
Q604	8-729-424-08	TRANSISTOR MUN2111T1	
Q607	8-729-921-73	TRANSISTOR 2SD1781K-T146-QR	
Q610	8-729-421-19	TRANSISTOR UN2213-TX	
Q611	8-729-216-22	TRANSISTOR 2SA1162-YG-TE85L	
Q612	8-729-010-25	TRANSISTOR MSD601-RT1	
Q614	8-729-010-25	TRANSISTOR MSD601-RT1	
Q615	8-729-010-25	TRANSISTOR MSD601-RT1	
Q701	8-729-024-88	TRANSISTOR MUN2212T1	
Q702	8-729-045-17	TRANSISTOR 2SB1561T100Q	
Q703	8-729-010-05	TRANSISTOR MSB709-RT1	
Q704	8-729-010-05	TRANSISTOR MSB709-RT1	
Q801	8-729-424-08	TRANSISTOR MUN2111T1	
Q802	8-729-921-73	TRANSISTOR 2SD1781K-T146-QR	
Q809	8-729-010-25	TRANSISTOR MSD601-RT1	
Q810	8-729-010-25	TRANSISTOR MSD601-RT1	
Q811	8-729-010-25	TRANSISTOR MSD601-RT1	
Q812	8-729-010-25	TRANSISTOR MSD601-RT1	
Q813	8-729-010-25	TRANSISTOR MSD601-RT1	
Q814	8-729-010-25	TRANSISTOR MSD601-RT1	
Q815	8-729-421-19	TRANSISTOR MUN2213T1	

AV-84

Ref. No.	Part No.	Description			Remarks
Q816	8-729-424-08	TRANSISTOR MUN2111T1			
R105	1-216-296-11	SHORT CHIP	0		
R106	1-216-296-11	SHORT CHIP	0		
R107	1-216-296-11	SHORT CHIP	0		
R108	1-216-296-11	SHORT CHIP	0		
R109	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R110	1-216-833-11	METAL CHIP	10K	5%	1/10W
R111	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R118	1-216-833-11	METAL CHIP	10K	5%	1/10W
R137	1-218-907-11	METAL CHIP	330K	0.5%	1/10W
R138	1-218-897-11	METAL CHIP	120K	0.5%	1/10W
R139	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R213	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R214	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R215	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R216	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R217	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R218	1-218-874-11	METAL CHIP	13K	0.5%	1/10W
R219	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R220	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R221	1-218-874-11	METAL CHIP	13K	0.5%	1/10W
R222	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R223	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R224	1-218-887-11	METAL CHIP	47K	0.5%	1/10W
R228	1-216-837-11	METAL CHIP	22K	5%	1/10W
R229	1-216-837-11	METAL CHIP	22K	5%	1/10W
R230	1-216-837-11	METAL CHIP	22K	5%	1/10W
R234	1-216-809-11	METAL CHIP	100	5%	1/10W
R235	1-216-818-11	METAL CHIP	560	5%	1/10W
R236	1-216-801-11	METAL CHIP	22	5%	1/10W
R237	1-216-797-11	METAL CHIP	10	5%	1/10W
R238	1-216-801-11	METAL CHIP	22	5%	1/10W
R242	1-216-836-11	METAL CHIP	18K	5%	1/10W
R243	1-216-836-11	METAL CHIP	18K	5%	1/10W
R244	1-216-836-11	METAL CHIP	18K	5%	1/10W
R302	1-216-821-11	METAL CHIP	1K	5%	1/10W
R303	1-216-817-11	METAL CHIP	470	5%	1/10W
R304	1-216-849-11	METAL CHIP	220K	5%	1/10W
R305	1-216-833-11	METAL CHIP	10K	5%	1/10W
R306	1-216-833-11	METAL CHIP	10K	5%	1/10W
R307	1-216-833-11	METAL CHIP	10K	5%	1/10W
R308	1-216-845-11	METAL CHIP	100K	5%	1/10W
R309	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R310	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R311	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R312	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R313	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
R314	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R315	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R316	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R317	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R318	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R320	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R321	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R323	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R324	1-216-864-11	SHORT CHIP	0		
R325	1-216-864-11	SHORT CHIP	0		
R326	1-216-817-11	METAL CHIP	470	5%	1/10W
R327	1-216-817-11	METAL CHIP	470	5%	1/10W
R330	1-216-841-11	METAL CHIP	47K	5%	1/10W
R331	1-216-841-11	METAL CHIP	47K	5%	1/10W
R332	1-216-833-11	METAL CHIP	10K	5%	1/10W
R333	1-216-833-11	METAL CHIP	10K	5%	1/10W
R334	1-216-833-11	METAL CHIP	10K	5%	1/10W
R335	1-216-841-11	METAL CHIP	47K	5%	1/10W
R336	1-216-833-11	METAL CHIP	10K	5%	1/10W
R337	1-216-841-11	METAL CHIP	47K	5%	1/10W
R338	1-216-833-11	METAL CHIP	10K	5%	1/10W
R339	1-216-833-11	METAL CHIP	10K	5%	1/10W
R340	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R342	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R343	1-216-845-11	METAL CHIP	100K	5%	1/10W
R344	1-216-845-11	METAL CHIP	100K	5%	1/10W
R345	1-216-821-11	METAL CHIP	1K	5%	1/10W
R346	1-216-821-11	METAL CHIP	1K	5%	1/10W
R347	1-216-821-11	METAL CHIP	1K	5%	1/10W
R348	1-216-813-11	METAL CHIP	220	5%	1/10W
R350	1-216-807-11	METAL CHIP	68	5%	1/10W
R351	1-216-864-11	SHORT CHIP	0		
R353	1-216-817-11	METAL CHIP	470	5%	1/10W
R355	1-216-817-11	METAL CHIP	470	5%	1/10W
R356	1-216-864-11	SHORT CHIP	0		
R405	1-216-809-11	METAL CHIP	100	5%	1/10W
R407	1-216-049-11	RES-CHIP	1K	5%	1/10W
R409	1-216-845-11	METAL CHIP	100K	5%	1/10W
R410	1-216-838-11	METAL CHIP	27K	5%	1/10W
R411	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R412	1-218-903-11	METAL CHIP	220K	0.5%	1/10W
R413	1-218-895-11	METAL CHIP	100K	0.5%	1/10W
R414	1-216-864-11	SHORT CHIP	0		
R418	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R419	1-216-828-11	METAL CHIP	3.9K	5%	1/10W
R420	1-216-821-11	METAL CHIP	1K	5%	1/10W
R421	1-216-826-11	METAL CHIP	2.7K	5%	1/10W
R422	1-216-821-11	METAL CHIP	1K	5%	1/10W
R423	1-216-857-11	METAL CHIP	1M	5%	1/10W
R424	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R425	1-216-809-11	METAL CHIP	100	5%	1/10W
R426	1-216-809-11	METAL CHIP	100	5%	1/10W
R427	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R428	1-216-821-11	METAL CHIP	1K	5%	1/10W
R433	1-216-821-11	METAL CHIP	1K	5%	1/10W
R434	1-216-809-11	METAL CHIP	100	5%	1/10W
R436	1-216-833-11	METAL CHIP	10K	5%	1/10W
R440	1-216-821-11	METAL CHIP	1K	5%	1/10W
R441	1-216-821-11	METAL CHIP	1K	5%	1/10W
R444	1-216-823-11	METAL CHIP	1.5K	5%	1/10W
R448	1-216-819-11	METAL CHIP	680	5%	1/10W
R453	1-216-845-11	METAL CHIP	100K	5%	1/10W
R456	1-216-821-11	METAL CHIP	1K	5%	1/10W
R457	1-216-025-11	RES-CHIP	100	5%	1/10W
R458	1-216-809-11	METAL CHIP	100	5%	1/10W
R459	1-216-821-11	METAL CHIP	1K	5%	1/10W
R461	1-216-864-11	SHORT CHIP	0		
R463	1-216-809-11	METAL CHIP	100	5%	1/10W
R464	1-216-809-11	METAL CHIP	100	5%	1/10W
R470	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R471	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R474	1-216-821-11	METAL CHIP	1K	5%	1/10W
R477	1-216-864-11	SHORT CHIP	0		

Ref. No.	Part No.	Description			Remarks
R478	1-216-864-11	SHORT CHIP	0		
R479	1-216-837-11	METAL CHIP	22K	5%	1/10W
R481	1-216-837-11	METAL CHIP	22K	5%	1/10W
R491	1-216-821-11	METAL CHIP	1K	5%	1/10W
R492	1-216-821-11	METAL CHIP	1K	5%	1/10W
R493	1-216-821-11	METAL CHIP	1K	5%	1/10W
R494	1-216-837-11	METAL CHIP	22K	5%	1/10W
R495	1-216-837-11	METAL CHIP	22K	5%	1/10W
R505	1-216-833-11	METAL CHIP	10K	5%	1/10W
R508	1-216-833-11	METAL CHIP	10K	5%	1/10W
R601	1-216-833-11	METAL CHIP	10K	5%	1/10W
R602	1-216-833-11	METAL CHIP	10K	5%	1/10W
R604	1-216-809-11	METAL CHIP	100	5%	1/10W
R605	1-216-809-11	METAL CHIP	100	5%	1/10W
R607	1-216-809-11	METAL CHIP	100	5%	1/10W
R610	1-216-789-11	RES-CHIP	2.2	5%	1/10W
R611	1-216-840-11	METAL CHIP	39K	5%	1/10W
R612	1-216-837-11	METAL CHIP	22K	5%	1/10W
R613	1-216-817-11	METAL CHIP	470	5%	1/10W
R615	1-216-833-11	METAL CHIP	10K	5%	1/10W
R616	1-216-864-11	SHORT CHIP	0		
R618	1-216-864-11	SHORT CHIP	0		
R619	1-216-833-11	METAL CHIP	10K	5%	1/10W
R621	1-216-864-11	SHORT CHIP	0		
R623	1-216-864-11	SHORT CHIP	0		
R625	1-216-864-11	SHORT CHIP	0		
R628	1-216-833-11	METAL CHIP	10K	5%	1/10W
R631	1-216-833-11	METAL CHIP	10K	5%	1/10W
R634	1-216-059-11	RES-CHIP	2.7K	5%	1/10W
R635	1-216-059-11	RES-CHIP	2.7K	5%	1/10W
R637	1-216-833-11	METAL CHIP	10K	5%	1/10W
R638	1-216-864-11	SHORT CHIP	0		
R639	1-216-809-11	METAL CHIP	100	5%	1/10W
R640	1-216-809-11	METAL CHIP	100	5%	1/10W
R642	1-216-833-11	METAL CHIP	10K	5%	1/10W
R648	1-216-833-11	METAL CHIP	10K	5%	1/10W
R653	1-216-809-11	METAL CHIP	100	5%	1/10W
R654	1-216-864-11	SHORT CHIP	0		
R657	1-216-833-11	METAL CHIP	10K	5%	1/10W
R661	1-216-833-11	METAL CHIP	10K	5%	1/10W
R662	1-216-817-11	METAL CHIP	470	5%	1/10W
R665	1-216-833-11	METAL CHIP	10K	5%	1/10W
R667	1-216-833-11	METAL CHIP	10K	5%	1/10W
R668	1-216-864-11	SHORT CHIP	0		
R669	1-216-864-11	SHORT CHIP	0		
R671	1-216-857-11	METAL CHIP	1M	5%	1/10W
R673	1-218-289-11	METAL CHIP	510	5%	1/10W
R674	1-216-841-11	METAL CHIP	47K	5%	1/10W
R675	1-216-864-11	SHORT CHIP	0		
R676	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R677	1-216-853-11	METAL CHIP	470K	5%	1/10W
R678	1-216-833-11	METAL CHIP	10K	5%	1/10W
R679	1-216-817-11	METAL CHIP	470	5%	1/10W
R680	1-216-809-11	METAL CHIP	100	5%	1/10W
R685	1-216-817-11	METAL CHIP	470	5%	1/10W
R686	1-216-809-11	METAL CHIP	100	5%	1/10W
R687	1-216-864-11	SHORT CHIP	0		
R688	1-216-809-11	METAL CHIP	100	5%	1/10W
R689	1-216-809-11	METAL CHIP	100	5%	1/10W
R692	1-216-809-11	METAL CHIP	100	5%	1/10W
R695	1-216-833-11	METAL CHIP	10K	5%	1/10W
R696	1-216-809-11	METAL CHIP	100	5%	1/10W
R698	1-216-809-11	METAL CHIP	100	5%	1/10W
R699	1-216-809-11	METAL CHIP	100	5%	1/10W
R701	1-216-810-11	METAL CHIP	120	5%	1/10W
R702	1-216-814-11	METAL CHIP	270	5%	1/10W
R703	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R704	1-216-864-11	SHORT CHIP	0		
R705	1-216-864-11	SHORT CHIP	0		
R707	1-216-833-11	METAL CHIP	10K	5%	1/10W
R708	1-216-864-11	SHORT CHIP	0		
R709	1-216-833-11	METAL CHIP	10K	5%	1/10W
R710	1-216-821-11	METAL CHIP	1K	5%	1/10W
R711	1-216-833-11	METAL CHIP	10K	5%	1/10W
R712	1-216-833-11	METAL CHIP	10K	5%	1/10W
R716	1-216-816-11	METAL CHIP	390	5%	1/10W
R717	1-216-821-11	METAL CHIP	1K	5%	1/10W
R718	1-216-810-11	METAL CHIP	120	5%	1/10W
R719	1-216-814-11	METAL CHIP	270	5%	1/10W
R720	1-216-816-11	METAL CHIP	390	5%	1/10W
R721	1-216-821-11	METAL CHIP	1K	5%	1/10W
R743	1-216-833-11	METAL CHIP	10K	5%	1/10W
R802	1-216-833-11	METAL CHIP	10K	5%	1/10W
R805	1-216-864-11	SHORT CHIP	0		
R806	1-216-864-11	SHORT CHIP	0		
R809	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R810	1-216-864-11	SHORT CHIP	0		
R811	1-216-864-11	SHORT CHIP	0		
R812	1-216-864-11	SHORT CHIP	0		
R813	1-216-864-11	SHORT CHIP	0		
R814	1-216-864-11	SHORT CHIP	0		
R815	1-216-864-11	SHORT CHIP	0		
R816	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R817	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R818	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R819	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R820	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R821	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R822	1-216-801-11	METAL CHIP	22	5%	1/10W
R823	1-216-801-11	METAL CHIP	22	5%	1/10W
R824	1-216-801-11	METAL CHIP	22	5%	1/10W
R825	1-216-801-11	METAL CHIP	22	5%	1/10W
R826	1-216-801-11	METAL CHIP	22	5%	1/10W
R827	1-216-801-11	METAL CHIP	22	5%	1/10W
R829	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R830	1-216-837-11	METAL CHIP	22K	5%	1/10W
R841	1-216-833-11	METAL CHIP	10K	5%	1/10W
R843	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R844	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R854	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R856	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R857	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R858	1-211-990-11	METAL CHIP	75	0.5%	1/10W
R873	1-218-285-11	METAL CHIP	75	5%	1/10W
R874	1-218-285-11	METAL CHIP	75	5%	1/10W
R875	1-218-285-11	METAL CHIP	75	5%	1/10W
R883	1-216-864-11	SHORT CHIP	0		
R884	1-216-864-11	SHORT CHIP	0		
R885	1-216-864-11	SHORT CHIP	0		
R886	1-216-864-11	SHORT CHIP	0		

Ref. No.	Part No.	Description			Remarks
R887	1-216-864-11	SHORT CHIP	0		
R1601	1-216-809-11	METAL CHIP	100	5%	1/10W
R1602	1-216-809-11	METAL CHIP	100	5%	1/10W
R1603	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1604	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1605	1-216-809-11	METAL CHIP	100	5%	1/10W
R1606	1-216-809-11	METAL CHIP	100	5%	1/10W
R1607	1-216-864-11	SHORT CHIP	0		
R1608	1-216-809-11	METAL CHIP	100	5%	1/10W
R1610	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1611	1-216-864-11	SHORT CHIP	0		
R1612	1-216-864-11	SHORT CHIP	0		
R1614	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1617	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1620	1-216-809-11	METAL CHIP	100	5%	1/10W
R1621	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1626	1-216-864-11	SHORT CHIP	0		
R1628	1-216-864-11	SHORT CHIP	0		
R1630	1-216-864-11	SHORT CHIP	0		
R1631	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R1632	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R1633	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1634	1-216-847-11	METAL CHIP	150K	5%	1/10W
R1635	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1636	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1637	1-216-837-11	METAL CHIP	22K	5%	1/10W
R1638	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1640	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1642	1-216-841-11	METAL CHIP	47K	5%	1/10W
R1643	1-216-839-11	METAL CHIP	33K	5%	1/10W
R1644	1-216-809-11	METAL CHIP	100	5%	1/10W
R1645	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1646	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1647	1-216-849-11	METAL CHIP	220K	5%	1/10W
R1648	1-216-809-11	METAL CHIP	100	5%	1/10W
R1649	1-216-809-11	METAL CHIP	100	5%	1/10W
R1650	1-216-809-11	METAL CHIP	100	5%	1/10W
R1651	1-216-864-11	SHORT CHIP	0		
R1652	1-216-809-11	METAL CHIP	100	5%	1/10W
R1653	1-216-809-11	METAL CHIP	100	5%	1/10W
R1654	1-216-864-11	SHORT CHIP	0		
R1655	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1656	1-216-864-11	SHORT CHIP	0		
R1657	1-216-864-11	SHORT CHIP	0		
R1658	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1659	1-216-864-11	SHORT CHIP	0		
R1660	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1661	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1662	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1663	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1664	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1665	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1666	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1667	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1668	1-216-809-11	METAL CHIP	100	5%	1/10W
R1669	1-216-809-11	METAL CHIP	100	5%	1/10W
R1670	1-216-864-11	SHORT CHIP	0		
R1671	1-216-864-11	SHORT CHIP	0		
R1672	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1673	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1674	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1676	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1677	1-216-864-11	SHORT CHIP	0		
R1678	1-216-864-11	SHORT CHIP	0		
R1682	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1683	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
R1684	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
R1685	1-216-864-11	SHORT CHIP	0		
R1686	1-216-864-11	SHORT CHIP	0		
R1687	1-218-859-11	METAL CHIP	3.3K	0.5%	1/10W
R1688	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
R1689	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1691	1-216-809-11	METAL CHIP	100	5%	1/10W
R1693	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W
R1695	1-216-864-11	SHORT CHIP	0		
R1696	1-216-864-11	SHORT CHIP	0		
R1698	1-218-875-11	METAL CHIP	15K	0.5%	1/10W
R1699	1-216-832-11	METAL CHIP	8.2K	5%	1/10W
R1700	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R1701	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1702	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1703	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1704	1-216-833-11	METAL CHIP	10K	5%	1/10W
R1705	1-216-809-11	METAL CHIP	100	5%	1/10W
R1706	1-216-809-11	METAL CHIP	100	5%	1/10W

< TUNER >

TU401	8-598-605-10	TUNER, FSS BTF-DF401

< VIBRATOR >

X401	1-781-041-11	VIBRATOR, CRYSTAL (SMD) (18.432MHz)
X601	1-795-243-21	VIBRATOR, CRYSTAL (SMD) (32.768kHz)
X602	1-781-913-11	VIBRATOR, CRYSTAL (20MHz)

CN-199 (J) COMPL (NOT SUPPLIED)
****

< CONNECTOR >

CN1801	1-818-021-11	PIN, CONNECTOR 40P

O	A-1056-838-A	ER-25 COMPL

****

< CAPACITOR >

C2001	1-107-726-91	CERAMIC CHIP	0.01uF	10.00%	16V
C2002	1-126-964-11	ELECT	10uF	20.00%	50V
C2003	1-126-964-11	ELECT	10uF	20.00%	50V
C2004	1-126-960-11	ELECT	1uF	20.00%	50V
C2005	1-126-947-11	ELECT	47uF	20.00%	16V
C2006	1-126-947-11	ELECT	47uF	20.00%	16V
C2007	1-104-658-91	ELECT	100uF	20.00%	10V
C2008	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C2009	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C2010	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C2011	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C2012	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C2013	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C2014	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C2015	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V

Ref. No.	Part No.	Description				Remarks
C2016	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2017	1-104-658-91	ELECT	100uF	20.00%	10V	
C2018	1-126-947-11	ELECT	47uF	20.00%	16V	
C2019	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2020	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2021	1-126-947-11	ELECT	47uF	20.00%	16V	
C2022	1-126-947-11	ELECT	47uF	20.00%	16V	
C2026	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2027	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2028	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2029	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2030	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2031	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2033	1-126-947-11	ELECT	47uF	20.00%	16V	
C2034	1-126-947-11	ELECT	47uF	20.00%	16V	
C2035	1-126-947-11	ELECT	47uF	20.00%	16V	
C2036	1-126-947-11	ELECT	47uF	20.00%	16V	
C2037	1-126-947-11	ELECT	47uF	20.00%	16V	
C2038	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2039	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2040	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2041	1-126-947-11	ELECT	47uF	20.00%	16V	
C2042	1-126-947-11	ELECT	47uF	20.00%	16V	
C2043	1-126-947-11	ELECT	47uF	20.00%	16V	
C2044	1-126-947-11	ELECT	47uF	20.00%	16V	
C2045	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2046	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2047	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2048	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2049	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2050	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2051	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2052	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2053	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2054	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2055	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2056	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V	
C2057	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2058	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2059	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2060	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
C2061	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	
		< CONNECTER >				
CN2001	1-770-706-11	CONNECTOR, FFC/FPC 23P				
CN2002	1-770-708-11	CONNECTOR, FFC/FPC 25P				
CN2003	1-816-044-11	CONNECTOR, SQUARE TYPE 21P				
CN2004	1-816-044-11	CONNECTOR, SQUARE TYPE 21P				
		< DIODE >				
D2001	8-719-069-55	DIODE UDZSTE-175.6B				
D2002	8-719-071-15	DIODE HZM6.8ZWA1TL				
D2003	8-719-071-15	DIODE HZM6.8ZWA1TL				
D2004	8-719-071-15	DIODE HZM6.8ZWA1TL				
D2005	8-719-071-15	DIODE HZM6.8ZWA1TL				
D2006	8-719-071-15	DIODE HZM6.8ZWA1TL				
D2007	8-719-071-15	DIODE HZM6.8ZWA1TL				
D2008	8-719-071-15	DIODE HZM6.8ZWA1TL				
D2009	8-719-071-15	DIODE HZM6.8ZWA1TL				
D2010	8-719-071-15	DIODE HZM6.8ZWA1TL				

Ref. No.	Part No.	Description		Remarks
D2011	8-719-071-15	DIODE HZM6.8ZWA1TL		
D2012	8-719-071-15	DIODE HZM6.8ZWA1TL		
D2013	8-719-071-15	DIODE HZM6.8ZWA1TL		
D2014	8-719-069-56	DIODE UDZSTE-176.2B		
D2015	8-719-083-63	DIODE UDZSTE-1713B		
D2016	8-719-069-56	DIODE UDZSTE-176.2B		
D2017	8-719-083-63	DIODE UDZSTE-1713B		
D2018	8-719-071-15	DIODE HZM6.8ZWA1TL		
D2019	8-719-071-15	DIODE HZM6.8ZWA1TL		
D2020	8-719-071-15	DIODE HZM6.8ZWA1TL		
D2021	8-719-071-15	DIODE HZM6.8ZWA1TL		
D2022	8-719-071-15	DIODE HZM6.8ZWA1TL		
D2023	8-719-071-15	DIODE HZM6.8ZWA1TL		
D2025	8-719-069-56	DIODE UDZSTE-176.2B		
		< FERRITE BEAD >		
FB2001	1-469-796-21	FERRITE	0uH	
FB2002	1-469-796-21	FERRITE	0uH	
FB2003	1-469-796-21	FERRITE	0uH	
FB2004	1-469-796-21	FERRITE	0uH	
FB2005	1-469-796-21	FERRITE	0uH	
FB2006	1-469-796-21	FERRITE	0uH	
FB2007	1-469-796-21	FERRITE	0uH	
FB2008	1-469-796-21	FERRITE	0uH	
FB2009	1-469-796-21	FERRITE	0uH	
FB2010	1-469-796-21	FERRITE	0uH	
FB2011	1-469-796-21	FERRITE	0uH	
FB2012	1-469-796-21	FERRITE	0uH	
FB2013	1-469-796-21	FERRITE	0uH	
FB2014	1-469-796-21	FERRITE	0uH	
FB2015	1-469-796-21	FERRITE	0uH	
FB2016	1-469-796-21	FERRITE	0uH	
FB2017	1-469-796-21	FERRITE	0uH	
FB2018	1-469-796-21	FERRITE	0uH	
FB2019	1-469-796-21	FERRITE	0uH	
FB2020	1-469-796-21	FERRITE	0uH	
FB2021	1-469-796-21	FERRITE	0uH	
FB2022	1-469-796-21	FERRITE	0uH	
FB2024	1-469-796-21	FERRITE	0uH	
		< IC >		
IC2001	6-705-338-01	IC TK11250CMCL-G		
IC2002	6-705-793-01	IC BH7624KS2		
IC2003	6-705-819-01	IC BD3825FS-E2		
IC2004	8-759-663-35	IC 74VHC4053MTCX		
IC2005	8-759-663-35	IC 74VHC4053MTCX		
		< COIL >		
L2001	1-400-145-21	INDUCTOR	47uH	
L2002	1-400-145-21	INDUCTOR	47uH	
L2003	1-419-368-11	INDUCTOR	47uH	
		< TRANSISTOR >		
Q2001	8-729-010-05	TRANSISTOR MSB709-RT1		
Q2002	8-729-010-25	TRANSISTOR MSD601-RT1		
Q2003	8-729-010-25	TRANSISTOR MSD601-RT1		
Q2004	8-729-010-25	TRANSISTOR MSD601-RT1		
Q2005	8-729-010-25	TRANSISTOR MSD601-RT1		

Ref. No.	Part No.	Description			Remarks
Q2006	8-729-010-25	TRANSISTOR MSD601-RT1			
Q2007	8-729-010-25	TRANSISTOR MSD601-RT1			
Q2008	6-550-683-01	TRANSISTOR RJK005N03-T146			
Q2010	8-729-421-19	TRANSISTOR MUN2213T1			
		< RESISTOR >			
R2002	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R2003	1-216-801-11	METAL CHIP	22	5%	1/10W
R2005	1-216-801-11	METAL CHIP	22	5%	1/10W
R2007	1-216-801-11	METAL CHIP	22	5%	1/10W
R2009	1-216-801-11	METAL CHIP	22	5%	1/10W
R2011	1-216-801-11	METAL CHIP	22	5%	1/10W
R2013	1-216-801-11	METAL CHIP	22	5%	1/10W
R2015	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R2016	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R2017	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R2018	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R2019	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R2020	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R2023	1-218-285-11	METAL CHIP	75	5%	1/10W
R2024	1-218-285-11	METAL CHIP	75	5%	1/10W
R2027	1-216-817-11	METAL CHIP	470	5%	1/10W
R2028	1-216-817-11	METAL CHIP	470	5%	1/10W
R2029	1-216-817-11	METAL CHIP	470	5%	1/10W
R2030	1-216-817-11	METAL CHIP	470	5%	1/10W
R2032	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2033	1-216-841-11	METAL CHIP	47K	5%	1/10W
R2034	1-216-849-11	METAL CHIP	220K	5%	1/10W
R2035	1-218-285-11	METAL CHIP	75	5%	1/10W
R2036	1-216-857-11	METAL CHIP	1M	5%	1/10W
R2037	1-218-285-11	METAL CHIP	75	5%	1/10W
R2040	1-218-285-11	METAL CHIP	75	5%	1/10W
R2041	1-216-817-11	METAL CHIP	470	5%	1/10W
R2042	1-216-817-11	METAL CHIP	470	5%	1/10W
R2043	1-216-817-11	METAL CHIP	470	5%	1/10W
R2044	1-216-817-11	METAL CHIP	470	5%	1/10W
R2045	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2046	1-216-864-11	SHORT CHIP	0		
R2047	1-218-285-11	METAL CHIP	75	5%	1/10W
R2048	1-216-807-11	METAL CHIP	68	5%	1/10W
R2049	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2051	1-218-285-11	METAL CHIP	75	5%	1/10W
R2052	1-218-285-11	METAL CHIP	75	5%	1/10W
R2053	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2054	1-218-285-11	METAL CHIP	75	5%	1/10W
R2055	1-218-285-11	METAL CHIP	75	5%	1/10W
R2056	1-218-285-11	METAL CHIP	75	5%	1/10W
R2058	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2059	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2060	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2061	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2062	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2063	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2064	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2065	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2069	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2070	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2071	1-218-285-11	METAL CHIP	75	5%	1/10W
R2072	1-218-285-11	METAL CHIP	75	5%	1/10W
R2073	1-216-864-11	SHORT CHIP	0		
R2078	1-216-849-11	METAL CHIP	220K	5%	1/10W
R2079	1-216-817-11	METAL CHIP	470	5%	1/10W
R2080	1-216-845-11	METAL CHIP	100K	5%	1/10W
R2083	1-216-849-11	METAL CHIP	220K	5%	1/10W
R2084	1-216-849-11	METAL CHIP	220K	5%	1/10W
R2094	1-216-833-11	METAL CHIP	10K	5%	1/10W
R2095	1-216-833-11	METAL CHIP	10K	5%	1/10W
0	A-1058-957-A	FL-140 (EH) COMPL			
		**********			
		< CAPACITOR >			
C101	1-124-589-11	ELECT	47uF	20.00%	16V
C102	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C105	1-115-339-11	CERAMIC CHIP	0.1uF	10.00%	50V
C106	1-162-922-11	CERAMIC CHIP	39PF	5.00%	50V
C109	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C110	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C112	1-125-972-91	ELECT	100uF	20.00%	16V
C113	1-106-363-12	MYLAR	0.0068uF	5.00%	100V
C114	1-115-339-11	CERAMIC CHIP	0.1uF	10.00%	50V
C115	1-128-131-11	ELECT	22uF	20.00%	50V
C116	1-115-339-11	CERAMIC CHIP	0.1uF	10.00%	50V
C118	1-115-339-11	CERAMIC CHIP	0.1uF	10.00%	50V
		< CONNECTOR >			
CN102	1-794-479-11	CONNECTOR, FFC/FPC 9P			
CN103	1-785-828-21	CONNECTOR, SQUARE TYPE 4P			
CN104	1-564-722-11	PIN, CONNECTOR (SMALL TYPE) 6P			
CN105	1-573-489-11	PIN, CONNECTOR (PC BOARD) 11P			
		< DIODE >			
D101	8-719-988-61	DIODE 1SS355TE-17			
D102	8-719-067-40	DIODE STZ6.8N-T146			
D104	8-719-067-40	DIODE STZ6.8N-T146			
D105	8-719-067-40	DIODE STZ6.8N-T146			
D106	8-719-067-40	DIODE STZ6.8N-T146			
D107	8-719-067-40	DIODE STZ6.8N-T146			
D108	8-719-067-40	DIODE STZ6.8N-T146			
D109	8-719-067-40	DIODE STZ6.8N-T146			
D110	8-719-988-61	DIODE 1SS355TE-17			
D111	8-719-988-61	DIODE 1SS355TE-17			
D112	8-719-988-61	DIODE 1SS355TE-17			
D113	8-719-083-70	DIODE UDZSTE-1727B			
D114	8-719-422-62	DIODE MA8062-L-TX			
		< TERMINAL >			
ET101	1-537-738-21	TERMINAL, EARTH			
		< FERRITE BEAD >			
FB101	1-414-233-22	FERRITE	0uH		
FB102	1-414-233-22	FERRITE	0uH		
FB103	1-414-233-22	FERRITE	0uH		
		< IC >			
IC101	6-705-405-01	IC ML9208-02MBZ03B			
		< JACK >			
J101	1-694-980-21	TERMINAL BOARD (S TERMINAL+3P)			

Ref. No.	Part No.	Description			Remarks
		< JUMPER RESISTOR >			
JR101	1-216-296-11	SHORT CHIP	0		
JR102	1-216-296-11	SHORT CHIP	0		
JR103	1-216-296-11	SHORT CHIP	0		
JR104	1-216-296-11	SHORT CHIP	0		
JR105	1-216-296-11	SHORT CHIP	0		
JR106	1-216-296-11	SHORT CHIP	0		
JR107	1-216-296-11	SHORT CHIP	0		
JR108	1-216-295-91	SHORT CHIP	0		
JR109	1-216-295-91	SHORT CHIP	0		
JR110	1-216-296-11	SHORT CHIP	0		
JR111	1-216-295-91	SHORT CHIP	0		
JR112	1-216-296-11	SHORT CHIP	0		
JR113	1-216-296-11	SHORT CHIP	0		
JR114	1-216-296-11	SHORT CHIP	0		
JR115	1-216-296-11	SHORT CHIP	0		
JR116	1-216-296-11	SHORT CHIP	0		
JR117	1-216-295-91	SHORT CHIP	0		
JR118	1-216-296-11	SHORT CHIP	0		
JR119	1-216-296-11	SHORT CHIP	0		
JR120	1-216-295-91	SHORT CHIP	0		
JR121	1-216-296-11	SHORT CHIP	0		
JR122	1-216-295-91	SHORT CHIP	0		
JR123	1-216-295-91	SHORT CHIP	0		
JR124	1-216-295-91	SHORT CHIP	0		
JR125	1-216-296-11	SHORT CHIP	0		
		< COIL >			
L101	1-412-533-21	INDUCTOR	47uH		
ND101	1-518-948-11	INDICATOR TUBE, FLUORESCENT			
		< TRANSISTOR >			
Q101	8-729-056-46	TRANSISTOR 2SC5053T100Q			
Q102	8-729-056-46	TRANSISTOR 2SC5053T100Q			
Q103	8-729-904-87	TRANSISTOR 2SB1197K-T-146-R			
		< RESISTOR >			
R102	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R104	1-216-809-11	METAL CHIP	100	5%	1/10W
R105	1-216-809-11	METAL CHIP	100	5%	1/10W
R106	1-216-809-11	METAL CHIP	100	5%	1/10W
R107	1-216-809-11	METAL CHIP	100	5%	1/10W
R108	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R109	1-216-864-11	SHORT CHIP	0		
R110	1-216-864-11	SHORT CHIP	0		
R111	1-216-864-11	SHORT CHIP	0		
R112	1-218-285-11	METAL CHIP	75	5%	1/10W
R113	1-218-285-11	METAL CHIP	75	5%	1/10W
R114	1-218-285-11	METAL CHIP	75	5%	1/10W
R115	1-216-849-11	METAL CHIP	220K	5%	1/10W
R116	1-216-849-11	METAL CHIP	220K	5%	1/10W
R118	1-216-833-11	METAL CHIP	10K	5%	1/10W
R120	1-216-838-11	METAL CHIP	27K	5%	1/10W
		< SWITCH >			
S101	1-771-349-21	SWITCH, TACT			

Ref. No.	Part No.	Description			Remarks
		< TRANFORMER >			
T101	1-443-137-11	TRANSFORMER, DC-DC CONVERTER			
O	A-1058-970-A	FR-215 (EH) COMPL			
		**********			
		< CAPACITOR >			
C062	1-107-726-91	CERAMIC CHIP	0.01uF	10.00% 16V	
C063	1-107-726-91	CERAMIC CHIP	0.01uF	10.00% 16V	
C064	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
		< CONNECTOR >			
CN001	1-793-599-11	CONNECTOR, FFC/FPC 17P			
CN002	1-794-473-11	CONNECTOR, FFC/FPC 9P			
		< DIODE >			
D001	8-719-077-79	DIODE SLR-332VRT32			
D002	8-719-077-79	DIODE SLR-332VRT32			
D004	6-500-176-01	DIODE EB3804X-TP-J555K			
D005	8-719-084-27	DIODE SLI-343YCT32WST			
		< SWITCH >			
EN030	1-786-502-21	SWITCH, TACTILE			
		< IC >			
IC061	6-600-350-01	IC GP1UM27SXK1F			
IC062	8-752-842-96	IC NJU3711M(TE2)			
		< JUMPER RESISTOR >			
JR001	1-216-295-91	SHORT CHIP	0		
JR002	1-216-296-11	SHORT CHIP	0		
JR003	1-216-296-11	SHORT CHIP	0		
JR004	1-216-296-11	SHORT CHIP	0		
JR005	1-216-296-11	SHORT CHIP	0		
JR006	1-216-296-11	SHORT CHIP	0		
JR007	1-216-295-91	SHORT CHIP	0		
JR008	1-216-295-91	SHORT CHIP	0		
JR009	1-216-296-11	SHORT CHIP	0		
JR010	1-216-296-11	SHORT CHIP	0		
JR011	1-216-295-91	SHORT CHIP	0		
JR012	1-216-295-91	SHORT CHIP	0		
JR013	1-216-296-11	SHORT CHIP	0		
JR014	1-216-295-91	SHORT CHIP	0		
JR015	1-216-296-11	SHORT CHIP	0		
JR016	1-216-296-11	SHORT CHIP	0		
JR017	1-216-296-11	SHORT CHIP	0		
JR018	1-216-296-11	SHORT CHIP	0		
JR019	1-216-295-91	SHORT CHIP	0		
JR020	1-216-295-91	SHORT CHIP	0		
JR021	1-216-295-91	SHORT CHIP	0		
JR022	1-216-295-91	SHORT CHIP	0		
JR023	1-216-296-11	SHORT CHIP	0		
JR024	1-216-295-91	SHORT CHIP	0		
JR025	1-216-295-91	SHORT CHIP	0		
JR026	1-216-296-11	SHORT CHIP	0		
JR027	1-216-296-11	SHORT CHIP	0		
JR028	1-216-296-11	SHORT CHIP	0		
JR029	1-216-296-11	SHORT CHIP	0		
JR030	1-216-296-11	SHORT CHIP	0		

FR-215 POWER BLOCK

Ref. No.	Part No.	Description			Remarks
JR031	1-216-296-11	SHORT CHIP	0		
JR032	1-216-296-11	SHORT CHIP	0		
JR033	1-216-296-11	SHORT CHIP	0		
JR034	1-216-296-11	SHORT CHIP	0		
JR035	1-216-295-91	SHORT CHIP	0		
JR036	1-216-295-91	SHORT CHIP	0		
JR037	1-216-295-91	SHORT CHIP	0		
JR038	1-216-295-91	SHORT CHIP	0		
JR039	1-216-296-11	SHORT CHIP	0		
JR040	1-216-296-11	SHORT CHIP	0		
JR041	1-216-295-91	SHORT CHIP	0		
JR042	1-216-295-91	SHORT CHIP	0		
JR043	1-216-295-91	SHORT CHIP	0		
JR044	1-216-295-91	SHORT CHIP	0		
JR045	1-216-296-11	SHORT CHIP	0		
JR046	1-216-296-11	SHORT CHIP	0		
JR047	1-216-296-11	SHORT CHIP	0		
JR048	1-216-296-11	SHORT CHIP	0		
JR049	1-216-296-11	SHORT CHIP	0		
JR050	1-216-295-91	SHORT CHIP	0		
JR051	1-216-296-11	SHORT CHIP	0		
JR052	1-216-296-11	SHORT CHIP	0		
JR053	1-216-296-11	SHORT CHIP	0		
JR054	1-216-296-11	SHORT CHIP	0		
JR055	1-216-296-11	SHORT CHIP	0		
JR056	1-216-295-91	SHORT CHIP	0		
JR057	1-216-295-91	SHORT CHIP	0		
		< TRANSISTOR >			
Q001	8-729-027-43	TRANSISTOR DTC114EKA-T146			
Q002	8-729-010-05	TRANSISTOR MSB709-RT1			
		< RESISTOR >			
R001	1-216-817-11	METAL CHIP	470	5%	1/10W
R002	1-216-817-11	METAL CHIP	470	5%	1/10W
R004	1-216-817-11	METAL CHIP	470	5%	1/10W
R005	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R012	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R013	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R014	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R015	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R016	1-216-832-11	METAL CHIP	8.2K	5%	1/10W
R017	1-216-837-11	METAL CHIP	22K	5%	1/10W
R022	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R023	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R024	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R025	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R026	1-216-832-11	METAL CHIP	8.2K	5%	1/10W
R027	1-216-837-11	METAL CHIP	22K	5%	1/10W
R032	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R033	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R034	1-216-827-11	METAL CHIP	3.3K	5%	1/10W
R035	1-216-830-11	METAL CHIP	5.6K	5%	1/10W
R036	1-216-832-11	METAL CHIP	8.2K	5%	1/10W
R037	1-216-837-11	METAL CHIP	22K	5%	1/10W
R042	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R043	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R051	1-216-864-11	SHORT CHIP	0		

Ref. No.	Part No.	Description			Remarks
R053	1-216-825-11	METAL CHIP	2.2K	5%	1/10W
R054	1-216-829-11	METAL CHIP	4.7K	5%	1/10W
R055	1-216-864-11	SHORT CHIP	0		
R061	1-216-864-11	SHORT CHIP	0		
		< SWITCH >			
S012	1-771-349-21	SWITCH, TACT			
S013	1-771-349-21	SWITCH, TACT			
S014	1-771-349-21	SWITCH, TACT			
S015	1-771-349-21	SWITCH, TACT			
S016	1-771-349-21	SWITCH, TACT			
S017	1-771-349-21	SWITCH, TACT			
S021	1-771-349-21	SWITCH, TACT			
S022	1-771-349-21	SWITCH, TACT			
S023	1-771-349-21	SWITCH, TACT			
S024	1-771-349-21	SWITCH, TACT			
S025	1-771-349-21	SWITCH, TACT			
S026	1-771-349-21	SWITCH, TACT			
S027	1-771-349-21	SWITCH, TACT			
S036	1-771-349-21	SWITCH, TACT			
S037	1-771-349-21	SWITCH, TACT			
S041	1-771-349-21	SWITCH, TACT			
S042	1-771-349-21	SWITCH, TACT			
S043	1-771-349-21	SWITCH, TACT			
⚠	1-468-843-11	POWER BLOCK			
		**********			
		< CAPACITOR >			
⚠C101	1-104-705-11	CAPACITOR	0.1uF	400V	
⚠C102	1-104-705-11	CAPACITOR	150uF	400V	
⚠C103		CERAMIC	100PF		
⚠C104		CERAMIC	100PF		
C105	9-885-065-10	CAPACITOR	150uF	400V	
⚠C112		CERAMIC	1000PF		
		< CONNECTOR >			
⚠CN101	9-885-065-11	INLET, AC			
CN3	1-778-318-21	CONNECTOR			
		< DIODE >			
D101	8-719-075-34	DIODE 1N4005L			
D102	8-719-075-34	DIODE 1N4005L			
D103	8-719-075-34	DIODE 1N4005L			
D104	8-719-075-34	DIODE 1N4005L			
D105	9-885-064-90	DIODE SARS01			
D106	8-719-061-02	DIODE PR1003			
D107	8-719-901-33	DIODE 1SS33			
D108	8-719-901-33	DIODE 1SS33			
D109	8-719-901-33	DIODE 1SS33			
D301	9-885-064-97	DIODE S3L20U			
D303	8-719-921-20	DIODE 1SS119			
D304	8-719-921-20	DIODE 1SS119			
D451	8-719-921-20	DIODE 1SS119			
D452	8-719-921-20	DIODE 1SS119			
D601	8-719-210-21	DIODE 11EQS04			

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
		< FUSE >			
⚠F101	9-885-064-94	FUSE (SST)	T3.15A/250V		
		< IC >			
IC101	9-885-065-07	IC STRW6852N			
IC301	8-759-632-07	IC M5237ML			
IC401	8-759-007-33	IC TL431CLP			
IC501					
		< COIL >			
⚠L101	9-885-065-09	LINE FILTER, LINE			
⚠L102	9-885-065-09	LINE FILTER, LINE			
		< IC LINK >			
⚠P301	9-885-065-02	FUSE (20N1000)	1A		
⚠P601	9-885-065-02	FUSE (20N1000)	1A		
⚠P401	9-885-065-03	FUSE (20N2000)	2A		
⚠P501	9-885-065-04	FUSE (20N2500)	2.5A		
		< PHOTO COUPLER >			
PC101	9-885-064-91	PHOTO COUPLER	PS2561AL1		
		< TRANSISTOR >			
Q301	9-885-064-99	TRANSISTOR 2SJ525			
Q303	9-885-065-00	TRANSISTOR 2SJ438			
Q451	8-729-901-81	TRANSISTOR 2SC2412			
Q501	9-885-065-01	TRANSISTOR 2SK3754			
		< TRANSFORMER >			
⚠T101	9-885-065-08	TRANSFORMER, POWER			
		< VARISTOR >			
⚠Z101	9-885-064-93	VARISTOR S10K300			
O	A-1070-805-A	RD-50 (EHKS) COMPL (UK)			
		******			
O	A-1070-806-A	RD-50 (EHCS) COMPL (AEP)			
		******			
		< CAPACITOR >			
C103	1-124-779-21	ELECT CHIP	10uF	20.00% 16V	
C109	1-124-779-21	ELECT CHIP	10uF	20.00% 16V	
C115	1-124-779-21	ELECT CHIP	10uF	20.00% 16V	
C116	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C117	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C118	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C119	1-124-779-21	ELECT CHIP	10uF	20.00% 16V	
C120	1-124-779-21	ELECT CHIP	10uF	20.00% 16V	
C123	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C125	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C126	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C127	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C128	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C132	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C133	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	

Ref. No.	Part No.	Description			Remarks
C135	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C136	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C137	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C138	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C139	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C140	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C141	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C142	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C144	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C145	1-162-913-11	CERAMIC CHIP	8PF	0.50PF 50V	
C146	1-162-913-11	CERAMIC CHIP	8PF	0.50PF 50V	
C147	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C148	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C149	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C150	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C151	1-162-970-11	CERAMIC CHIP	0.01uF	10.00% 25V	
C153	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C154	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C155	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C201	1-164-874-11	CERAMIC CHIP	100PF	5.00% 50V	
C202	1-124-779-21	ELECT CHIP	10uF	20.00% 16V	
C204	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C205	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C206	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C207	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C208	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C324	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C327	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C328	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C329	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C330	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C331	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C332	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C333	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C334	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C335	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C336	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C337	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C338	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C339	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C340	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C341	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C342	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C343	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C344	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C345	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C346	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C347	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C348	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C349	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C350	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C351	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C352	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C353	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C354	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remarks
C355	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C356	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C357	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C358	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C359	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C360	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C361	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C362	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C363	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C364	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C373	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C401	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C402	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C501	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C502	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C503	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C504	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C505	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C506	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C507	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C701	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C702	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C704	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C705	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C706	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C707	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C708	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C715	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C716	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C717	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C718	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C719	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C720	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C721	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C722	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C723	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C724	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C725	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C726	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C727	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C728	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C729	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C730	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C731	1-162-915-11	CERAMIC CHIP	10PF	0.50PF	50V
C732	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C733	1-162-915-11	CERAMIC CHIP	10PF	0.50PF	50V
C734	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C735	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C736	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C737	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C738	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C739	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C740	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C741	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C803	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C808	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C809	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C812	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C813	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C814	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C815	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C816	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C817	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C818	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C819	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C820	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C821	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C822	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C823	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C901	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C903	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C905	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C906	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C907	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C908	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C910	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C911	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C912	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C913	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C914	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C915	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C916	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C917	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C918	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C919	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C920	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C921	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C922	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C923	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C924	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C925	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C926	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C928	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1001	1-135-834-91	CERAMIC CHIP	2.2E+06PF		6.3V
C1002	1-162-966-11	CERAMIC CHIP	0.0022uF	10.00%	50V
C1003	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1004	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1005	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1006	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1007	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1009	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C1101	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1103	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1105	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1106	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1107	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1108	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1109	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1110	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1112	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1113	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1114	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1115	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1116	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1117	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1118	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1119	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1120	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1121	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1122	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V

Ref. No.	Part No.	Description			Remarks
C1123	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1124	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1125	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1126	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1127	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1130	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1131	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1132	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1133	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1201	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1202	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1203	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1204	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1206	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1207	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1209	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1211	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1212	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1214	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1215	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1216	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1217	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1218	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1219	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1221	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1222	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1224	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1225	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1227	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1228	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1230	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1231	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1234	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1235	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1237	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1238	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1239	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1240	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1245	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1249	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1305	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C1308	1-126-206-11	ELECT CHIP	100uF	20.00%	6.3V
C1311	1-126-206-11	ELECT CHIP	100uF	20.00%	6.3V
C1313	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C1314	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1317	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1318	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1319	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1320	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1321	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1323	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1324	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1326	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1327	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1329	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1330	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1332	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1333	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1339	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1340	1-162-927-11	CERAMIC CHIP	100PF	5.00%	50V
C1341	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1342	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1346	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1347	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1349	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1350	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1353	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1354	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1355	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1356	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1357	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1358	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1359	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1360	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1361	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1362	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1363	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1364	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1365	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1366	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1367	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1368	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1369	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1371	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1372	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1374	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1376	1-126-206-11	ELECT CHIP	100uF	20.00%	6.3V
C1377	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
C1401	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1501	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1502	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1503	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1504	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1505	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1506	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1508	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1509	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1510	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1511	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1512	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1513	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1514	1-164-943-11	CERAMIC CHIP	0.01uF	10.00%	16V
C1601	1-162-970-11	CERAMIC CHIP	0.01uF	10.00%	25V
C1602	1-162-964-11	CERAMIC CHIP	0.001uF	10.00%	50V
C1603	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V
C1604	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1701	1-124-779-21	ELECT CHIP	10uF	20.00%	16V
C1702	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1703	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1704	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1705	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1707	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1708	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1709	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1710	1-125-777-11	CERAMIC CHIP	0.1uF	10.00%	10V
C1711	1-162-916-11	CERAMIC CHIP	12PF	5.00%	50V
C1712	1-162-916-11	CERAMIC CHIP	12PF	5.00%	50V
C1805	1-126-390-11	ELECT CHIP	22uF	20.00%	6.3V
C1806	1-126-390-11	ELECT CHIP	22uF	20.00%	6.3V
C1807	1-126-394-11	ELECT CHIP	10uF	20.00%	16V

Ref. No.	Part No.	Description			Remarks
C1810	1-126-394-11	ELECT CHIP	10uF	20.00% 16V	
C1811	1-126-206-11	ELECT CHIP	100uF	20.00% 6.3V	
C1812	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C1813	1-126-394-11	ELECT CHIP	10uF	20.00% 16V	
C1815	1-104-610-11	ELECT CHIP	47uF	20.00% 4V	
C1816	1-104-610-11	ELECT CHIP	47uF	20.00% 4V	
C1901	1-162-970-11	CERAMIC CHIP	0.01uF	10.00% 25V	
C2104	1-124-779-21	ELECT CHIP	10uF	20.00% 16V	
C2105	1-124-779-21	ELECT CHIP	10uF	20.00% 16V	
C2114	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2115	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2116	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2117	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2118	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2119	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2120	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2121	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2122	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2123	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2124	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2125	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2126	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C2127	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C2128	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C2131	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C2132	1-125-777-11	CERAMIC CHIP	0.1uF	10.00% 10V	
C2133	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2134	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2135	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2136	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2137	1-165-979-21	ELECT	100uF	20% 6.3V	
C2138	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2139	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2140	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2146	1-124-779-21	ELECT CHIP	10uF	20.00% 16V	
C2202	1-124-779-21	ELECT CHIP	10uF	20.00% 16V	
C2204	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2205	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2206	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2207	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2208	1-162-913-11	CERAMIC CHIP	8PF	0.50PF 50V	
C2209	1-162-913-11	CERAMIC CHIP	8PF	0.50PF 50V	
C2210	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2212	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2213	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2214	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2215	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2216	1-164-943-11	CERAMIC CHIP	0.01uF	10.00% 16V	
C2217	1-125-837-91	CERAMIC CHIP	1uF	10% 6.3V	
C2218	1-164-388-91	CERAMIC CHIP	270PF	5.00% 50V	
		< CONNECTOR >			
CN103	1-764-177-11	PIN, CONNECTOR (SMD)(1.5MM) 7P			
CN1903	1-794-707-11	CONNECTOR, FFC/FPC 25P			
CN2201	1-770-161-21	PIN, CONNECTOR (PC BOARD) 6P			

Ref. No.	Part No.	Description	Remarks
		< DIODE >	
D101	8-719-066-17	DIODE FTZ6.8E-T148	
D202	8-719-988-61	DIODE 1SS355TE-17	
D1601	8-719-988-61	DIODE 1SS355TE-17	
D1602	8-719-988-61	DIODE 1SS355TE-17	
D1801	8-719-075-77	DIODE EC10DA40-TE12	
D2103	8-719-027-95	DIODE HSM88WK-TL	
D2104	8-719-081-96	DIODE KV1870STL	
		< FERRITE BEAD >	
FB901	1-469-324-21	FERRITE 0uH	
FB1801	1-469-324-21	FERRITE 0uH	
FB1802	1-469-324-21	FERRITE 0uH	
FB1803	1-469-324-21	FERRITE 0uH	
FB1804	1-469-324-21	FERRITE 0uH	
FB1805	1-469-324-21	FERRITE 0uH	
FB1901	1-469-083-21	FERRITE 0uH	
		< FILTER >	
FL101	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL103	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL201	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL302	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL501	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL802	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL901	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL902	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1001	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1101	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1102	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1201	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1202	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1302	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1304	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1305	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1701	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1801	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1802	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1803	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1804	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL1805	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL2101	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL2103	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL2201	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
FL2202	1-234-867-11	FILTER, EMI REMOVAL (SMD)	
		< IC >	
IC103	6-705-379-01	IC HD6417306BL200V	
IC104	8-759-573-97	IC SN74LVC541APWR	
IC106	6-703-875-01	IC CDCVF2505PWR	
IC108	6-705-296-01	IC MT48LC16M16A2P-75-Y16Y	
IC108	6-705-755-01	IC K4S561632E-UC75T	
IC108	6-706-007-01	IC HY57V561620CTP-HDR	
IC109	6-705-296-01	IC MT48LC16M16A2P-75-Y16Y	
IC109	6-705-755-01	IC K4S561632E-UC75T	
IC109	6-706-007-01	IC HY57V561620CTP-HDR	
IC111	6-705-378-01	IC CAT24WC32W-TE13	

Ref. No.	Part No.	Description	Remarks
IC112	6-703-583-01	IC SN74ACT08PWR	
IC201	6-705-297-01	IC MBM29Z0003PCN-KE1	
IC204	6-705-297-01	IC MBM29Z0003PCN-KE1	
IC301	6-701-025-01	IC SN74LVC16244ADGGR	
IC302	6-701-025-01	IC SN74LVC16244ADGGR	
IC303	8-759-392-81	IC SN74LVC16245ADGGR	
IC304	8-759-392-81	IC SN74LVC16245ADGGR	
IC305	6-701-025-01	IC SN74LVC16244ADGGR	
IC306	6-701-025-01	IC SN74LVC16244ADGGR	
IC307	8-759-392-81	IC SN74LVC16245ADGGR	
IC308	6-701-025-01	IC SN74LVC16244ADGGR	
IC309	6-701-025-01	IC SN74LVC16244ADGGR	
IC310	8-759-392-81	IC SN74LVC16245ADGGR	
IC401	8-759-680-48	IC TC7WH157FK(TE85R)	
IC402	6-705-336-01	IC K9F2808U0C-PCB0T	
IC501	6-705-324-01	IC CXD9778R	
IC701	6-705-312-01	IC S-T111B33MC-OGSTFG	
IC702	6-706-359-01	IC TVP5146M1PFP	
IC703	6-706-280-01	IC PQ1M185M2SPQ	
IC803	6-705-295-01	IC CXD9779R	
IC901	6-705-234-01	IC UPD61052GD-LML-A	
IC902	6-705-043-01	IC IC42S16400-7TG	
IC902	6-075-043-01	IC IC42S16400-7TG(T&R)	
IC902	6-706-077-01	IC HY57V641620HGTP-P-DR	
IC903	6-705-043-01	IC IC42S16400-7TG	
IC903	6-075-043-01	IC IC42S16400-7TG(T&R)	
IC903	6-706-077-01	IC HY57V641620HGTP-P-DR	
IC1001	6-705-951-01	IC AK4122VQ-L	
IC1101	6-705-298-01	IC CXD9777GG	
IC1102	6-705-296-01	IC MT48LC16M16A2P-75-Y16Y	
IC1102	6-705-755-01	IC K4S561632E-UC75T	
IC1102	6-706-007-01	IC HY57V561620CTP-HDR	
IC1201	6-705-311-01	IC S-T111B18MC-OGDTFG	
IC1202	8-752-416-45	IC CXD1935Q	
IC1203	6-705-043-01	IC IC42S16400-7TG	
IC1203	6-075-043-01	IC IC42S16400-7TG(T&R)	
IC1203	6-706-077-01	IC HY57V641620HGTP-P-DR	
IC1206	8-759-679-55	IC SN74LVC08APWR	
IC1301	8-752-424-75	IC CXD4701GB	
IC1304	6-704-838-01	IC MT48LC2M32B2P-7-Y94W	
IC1304	6-704-838-01	IC MT48LC2M32B2P-7-Y14W	
IC1305	6-704-838-01	IC MT48LC2M32B2P-7-Y94W	
IC1305	6-704-838-01	IC MT48LC2M32B2P-7-Y14W	
IC1306	6-705-312-01	IC S-T111B33MC-OGSTFG	
IC1402	8-759-549-01	IC SN74LV125APWR	
IC1501	6-705-008-11	IC CXD9722ATQ	
IC1502	6-703-845-01	IC IC42S16100-7TG (T&R)	
IC1502	6-705-992-01	IC HY57V161610ETP-7	
IC1502	6-705-992-11	IC HY57V161610ETP-7DR	
IC1601	6-703-704-01	IC AK4381VT-E2	
IC1701	8-759-679-55	IC SN74LVC08APWR	
IC1702	6-705-192-01	IC BU2367FV-FE2	
IC1703	8-759-679-55	IC SN74LVC08APWR	
IC1704	8-759-679-55	IC SN74LVC08APWR	
IC1802	6-705-292-01	IC PQ018EH02ZPH	
IC1803	6-704-923-01	IC PQ015EZ01ZPH	
IC1804	6-703-756-01	IC PQ1L503M2SPQ	
IC2102	6-706-366-01	IC UPD72893BGD-LML-A	
IC2103	6-703-845-01	IC IC42S16100-7TG (T&R)	
IC2105	8-759-096-87	IC TC7WU04FU(TE12R)	
IC2106	6-701-877-01	IC SM8707EV-G-E2	
IC2201	6-705-312-01	IC S-T111B33MC-OGSTFG	
IC2202	6-706-365-01	IC UPD72852AGB-8EU-A	

< COIL >

L701	1-469-967-21	INDUCTOR	10uH		
L702	1-469-967-21	INDUCTOR	10uH		
L1301	1-400-145-21	INDUCTOR	47uH		
L2102	1-410-371-41	INDUCTOR	1.5uH		
LF2201	1-419-370-21	INDUCTOR	0uH		
LF2202	1-419-370-21	INDUCTOR	0uH		

< TRANSISTOR >

Q1301	8-729-010-05	TRANSISTOR MSB709-RT1			
Q1302	8-729-010-05	TRANSISTOR MSB709-RT1			
Q1303	8-729-010-05	TRANSISTOR MSB709-RT1			
Q1304	8-729-010-05	TRANSISTOR MSB709-RT1			
Q1305	8-729-010-05	TRANSISTOR MSB709-RT1			
Q1306	8-729-010-05	TRANSISTOR MSB709-RT1			
Q2101	1-801-806-11	TRANSISTOR DTC144EKA-T146			

< RESISTOR >

R102	1-218-941-81	RES-CHIP	100	5%	1/16W
R103	1-218-965-11	RES-CHIP	10K	5%	1/16W
R104	1-218-941-81	RES-CHIP	100	5%	1/16W
R105	1-218-941-81	RES-CHIP	100	5%	1/16W
R106	1-218-990-11	SHORT CHIP	0		
R118	1-218-990-11	SHORT CHIP	0		
R120	1-218-990-11	SHORT CHIP	0		
R121	1-218-990-11	SHORT CHIP	0		
R122	1-218-990-11	SHORT CHIP	0		
R123	1-218-990-11	SHORT CHIP	0		
R134	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R135	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R136	1-218-990-11	SHORT CHIP	0		
R137	1-216-864-11	SHORT CHIP	0		
R140	1-218-965-11	RES-CHIP	10K	5%	1/16W
R141	1-218-990-11	SHORT CHIP	0		
R143	1-216-864-11	SHORT CHIP	0		
R144	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R145	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R146	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R149	1-218-938-11	RES-CHIP	56	5%	1/16W
R150	1-208-635-11	RES-CHIP	10	5%	1/16W
R152	1-208-635-11	RES-CHIP	10	5%	1/16W
R154	1-218-938-11	RES-CHIP	56	5%	1/16W
R155	1-218-938-11	RES-CHIP	56	5%	1/16W
R161	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R162	1-218-937-11	RES-CHIP	47	5%	1/16W
R163	1-218-965-11	RES-CHIP	10K	5%	1/16W
R164	1-218-965-11	RES-CHIP	10K	5%	1/16W
R165	1-218-965-11	RES-CHIP	10K	5%	1/16W
R166	1-218-965-11	RES-CHIP	10K	5%	1/16W
R167	1-208-635-11	RES-CHIP	10	5%	1/16W
R168	1-218-965-11	RES-CHIP	10K	5%	1/16W
R170	1-218-990-11	SHORT CHIP	0		
R171	1-218-965-11	RES-CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R172	1-218-965-11	RES-CHIP	10K	5%	1/16W
R173	1-218-965-11	RES-CHIP	10K	5%	1/16W
R174	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R175	1-218-990-11	SHORT CHIP	0		
R176	1-218-938-11	RES-CHIP	56	5%	1/16W
R179	1-218-965-11	RES-CHIP	10K	5%	1/16W
R181	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R182	1-218-965-11	RES-CHIP	10K	5%	1/16W
R183	1-218-965-11	RES-CHIP	10K	5%	1/16W
R184	1-218-965-11	RES-CHIP	10K	5%	1/16W
R185	1-218-965-11	RES-CHIP	10K	5%	1/16W
R186	1-218-965-11	RES-CHIP	10K	5%	1/16W
R187	1-218-990-11	SHORT CHIP	0		
R189	1-218-990-11	SHORT CHIP	0		
R190	1-218-938-11	RES-CHIP	56	5%	1/16W
R193	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R194	1-218-937-11	RES-CHIP	47	5%	1/16W
R195	1-218-938-11	RES-CHIP	56	5%	1/16W
R206	1-218-965-11	RES-CHIP	10K	5%	1/16W
R214	1-218-965-11	RES-CHIP	10K	5%	1/16W
R215	1-218-965-11	RES-CHIP	10K	5%	1/16W
R224	1-218-990-11	SHORT CHIP	0		
R303	1-218-937-11	RES-CHIP	47	5%	1/16W
R308	1-218-938-11	RES-CHIP	56	5%	1/16W
R309	1-218-965-11	RES-CHIP	10K	5%	1/16W
R310	1-218-965-11	RES-CHIP	10K	5%	1/16W
R311	1-218-965-11	RES-CHIP	10K	5%	1/16W
R314	1-218-933-11	RES-CHIP	22	5%	1/16W
R315	1-218-938-11	RES-CHIP	56	5%	1/16W
R316	1-218-937-11	RES-CHIP	47	5%	1/16W
R317	1-218-938-11	RES-CHIP	56	5%	1/16W
R319	1-218-965-11	RES-CHIP	10K	5%	1/16W
R322	1-218-965-11	RES-CHIP	10K	5%	1/16W
R323	1-218-939-11	RES-CHIP	68	5%	1/16W
R324	1-218-939-11	RES-CHIP	68	5%	1/16W
R325	1-218-939-11	RES-CHIP	68	5%	1/16W
R326	1-218-939-11	RES-CHIP	68	5%	1/16W
R328	1-218-938-11	RES-CHIP	56	5%	1/16W
R329	1-218-938-11	RES-CHIP	56	5%	1/16W
R330	1-218-938-11	RES-CHIP	56	5%	1/16W
R335	1-218-965-11	RES-CHIP	10K	5%	1/16W
R345	1-218-990-11	SHORT CHIP	0		
R346	1-218-934-11	RES-CHIP	27	5%	1/16W
R347	1-218-935-11	RES-CHIP	33	5%	1/16W
R348	1-218-935-11	RES-CHIP	33	5%	1/16W
R349	1-218-936-11	RES-CHIP	39	5%	1/16W
R350	1-218-935-11	RES-CHIP	33	5%	1/16W
R351	1-218-935-11	RES-CHIP	33	5%	1/16W
R352	1-218-933-11	RES-CHIP	22	5%	1/16W
R353	1-218-937-11	RES-CHIP	47	5%	1/16W
R354	1-218-939-11	RES-CHIP	68	5%	1/16W
R355	1-218-939-11	RES-CHIP	68	5%	1/16W
R356	1-218-937-11	RES-CHIP	47	5%	1/16W
R358	1-218-937-11	RES-CHIP	47	5%	1/16W
R360	1-218-937-11	RES-CHIP	47	5%	1/16W
R361	1-218-937-11	RES-CHIP	47	5%	1/16W
R363	1-218-965-11	RES-CHIP	10K	5%	1/16W
R364	1-218-965-11	RES-CHIP	10K	5%	1/16W
R376	1-218-937-11	RES-CHIP	47	5%	1/16W
R377	1-218-938-11	RES-CHIP	56	5%	1/16W
R391	1-218-990-11	SHORT CHIP	0		
R393	1-218-990-11	SHORT CHIP	0		
R408	1-218-990-11	SHORT CHIP	0		
R409	1-218-965-11	RES-CHIP	10K	5%	1/16W
R411	1-218-953-11	RES-CHIP	1K	5%	1/16W
R424	1-218-965-11	RES-CHIP	10K	5%	1/16W
R425	1-218-965-11	RES-CHIP	10K	5%	1/16W
R502	1-218-965-11	RES-CHIP	10K	5%	1/16W
R503	1-218-965-11	RES-CHIP	10K	5%	1/16W
R504	1-218-965-11	RES-CHIP	10K	5%	1/16W
R510	1-218-965-11	RES-CHIP	10K	5%	1/16W
R511	1-218-965-11	RES-CHIP	10K	5%	1/16W
R512	1-218-965-11	RES-CHIP	10K	5%	1/16W
R513	1-218-965-11	RES-CHIP	10K	5%	1/16W
R515	1-218-965-11	RES-CHIP	10K	5%	1/16W
R524	1-218-933-11	RES-CHIP	22	5%	1/16W
R525	1-218-933-11	RES-CHIP	22	5%	1/16W
R526	1-218-933-11	RES-CHIP	22	5%	1/16W
R528	1-218-990-11	SHORT CHIP	0		
R530	1-218-990-11	SHORT CHIP	0		
R536	1-218-990-11	SHORT CHIP	0		
R541	1-218-965-11	RES-CHIP	10K	5%	1/16W
R544	1-218-965-11	RES-CHIP	10K	5%	1/16W
R547	1-218-965-11	RES-CHIP	10K	5%	1/16W
R549	1-218-965-11	RES-CHIP	10K	5%	1/16W
R550	1-218-965-11	RES-CHIP	10K	5%	1/16W
R552	1-218-965-11	RES-CHIP	10K	5%	1/16W
R554	1-218-965-11	RES-CHIP	10K	5%	1/16W
R556	1-218-965-11	RES-CHIP	10K	5%	1/16W
R558	1-218-965-11	RES-CHIP	10K	5%	1/16W
R561	1-218-965-11	RES-CHIP	10K	5%	1/16W
R568	1-218-965-11	RES-CHIP	10K	5%	1/16W
R572	1-218-965-11	RES-CHIP	10K	5%	1/16W
R573	1-218-965-11	RES-CHIP	10K	5%	1/16W
R576	1-218-965-11	RES-CHIP	10K	5%	1/16W
R577	1-218-965-11	RES-CHIP	10K	5%	1/16W
R579	1-218-990-11	SHORT CHIP	0		
R580	1-218-965-11	RES-CHIP	10K	5%	1/16W
R581	1-218-965-11	RES-CHIP	10K	5%	1/16W
R582	1-218-935-11	RES-CHIP	33	5%	1/16W
R583	1-218-965-11	RES-CHIP	10K	5%	1/16W
R585	1-218-965-11	RES-CHIP	10K	5%	1/16W
R587	1-218-965-11	RES-CHIP	10K	5%	1/16W
R598	1-218-965-11	RES-CHIP	10K	5%	1/16W
R599	1-218-990-11	SHORT CHIP	0		
R703	1-218-990-11	SHORT CHIP	0		
R704	1-218-990-11	SHORT CHIP	0		
R705	1-218-990-11	SHORT CHIP	0		
R706	1-218-990-11	SHORT CHIP	0		
R707	1-218-990-11	SHORT CHIP	0		
R714	1-218-990-11	SHORT CHIP	0		
R715	1-218-977-11	RES-CHIP	100K	5%	1/16W
R716	1-218-933-11	RES-CHIP	22	5%	1/16W
R717	1-218-941-81	RES-CHIP	100	5%	1/16W
R718	1-218-933-11	RES-CHIP	22	5%	1/16W
R719	1-218-941-81	RES-CHIP	100	5%	1/16W
R720	1-218-965-11	RES-CHIP	10K	5%	1/16W
R722	1-218-990-11	SHORT CHIP	0		
R726	1-218-990-11	SHORT CHIP	0		
R729	1-218-965-11	RES-CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R736	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R737	1-218-990-11	SHORT CHIP	0		
R738	1-218-990-11	SHORT CHIP	0		
R739	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R740	1-218-965-11	RES-CHIP	10K	5%	1/16W
R826	1-218-935-11	RES-CHIP	33	5%	1/16W
R827	1-218-935-11	RES-CHIP	33	5%	1/16W
R828	1-218-935-11	RES-CHIP	33	5%	1/16W
R829	1-218-935-11	RES-CHIP	33	5%	1/16W
R830	1-218-935-11	RES-CHIP	33	5%	1/16W
R831	1-218-935-11	RES-CHIP	33	5%	1/16W
R832	1-218-935-11	RES-CHIP	33	5%	1/16W
R849	1-218-965-11	RES-CHIP	10K	5%	1/16W
R852	1-218-965-11	RES-CHIP	10K	5%	1/16W
R868	1-218-935-11	RES-CHIP	33	5%	1/16W
R871	1-218-935-11	RES-CHIP	33	5%	1/16W
R873	1-218-935-11	RES-CHIP	33	5%	1/16W
R875	1-218-935-11	RES-CHIP	33	5%	1/16W
R879	1-218-935-11	RES-CHIP	33	5%	1/16W
R882	1-218-935-11	RES-CHIP	33	5%	1/16W
R884	1-218-935-11	RES-CHIP	33	5%	1/16W
R886	1-218-935-11	RES-CHIP	33	5%	1/16W
R888	1-218-935-11	RES-CHIP	33	5%	1/16W
R892	1-218-935-11	RES-CHIP	33	5%	1/16W
R894	1-218-935-11	RES-CHIP	33	5%	1/16W
R897	1-218-935-11	RES-CHIP	33	5%	1/16W
R899	1-218-935-11	RES-CHIP	33	5%	1/16W
R903	1-218-973-11	RES-CHIP	47K	5%	1/16W
R904	1-216-864-11	SHORT CHIP	0		
R906	1-218-941-81	RES-CHIP	100	5%	1/16W
R907	1-218-990-11	SHORT CHIP	0		
R909	1-218-937-11	RES-CHIP	47	5%	1/16W
R910	1-218-965-11	RES-CHIP	10K	5%	1/16W
R911	1-218-937-11	RES-CHIP	47	5%	1/16W
R917	1-218-990-11	SHORT CHIP	0		
R918	1-218-965-11	RES-CHIP	10K	5%	1/16W
R919	1-218-965-11	RES-CHIP	10K	5%	1/16W
R920	1-218-965-11	RES-CHIP	10K	5%	1/16W
R921	1-218-965-11	RES-CHIP	10K	5%	1/16W
R924	1-218-965-11	RES-CHIP	10K	5%	1/16W
R925	1-218-937-11	RES-CHIP	47	5%	1/16W
R926	1-218-937-11	RES-CHIP	47	5%	1/16W
R927	1-218-937-11	RES-CHIP	47	5%	1/16W
R928	1-218-937-11	RES-CHIP	47	5%	1/16W
R929	1-218-937-11	RES-CHIP	47	5%	1/16W
R930	1-218-937-11	RES-CHIP	47	5%	1/16W
R931	1-218-939-11	RES-CHIP	68	5%	1/16W
R935	1-218-937-11	RES-CHIP	47	5%	1/16W
R1002	1-218-990-11	SHORT CHIP	0		
R1005	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1008	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1010	1-218-949-11	RES-CHIP	470	5%	1/16W
R1022	1-218-966-11	RES-CHIP	12K	5%	1/16W
R1023	1-218-941-81	RES-CHIP	100	5%	1/16W
R1027	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1105	1-218-990-11	SHORT CHIP	0		
R1106	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1108	1-218-935-11	RES-CHIP	33	5%	1/16W
R1112	1-218-935-11	RES-CHIP	33	5%	1/16W
R1113	1-218-935-11	RES-CHIP	33	5%	1/16W
R1118	1-218-935-11	RES-CHIP	33	5%	1/16W
R1121	1-218-935-11	RES-CHIP	33	5%	1/16W
R1123	1-218-935-11	RES-CHIP	33	5%	1/16W
R1124	1-218-935-11	RES-CHIP	33	5%	1/16W
R1126	1-218-935-11	RES-CHIP	33	5%	1/16W
R1142	1-218-935-11	RES-CHIP	33	5%	1/16W
R1144	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1145	1-218-935-11	RES-CHIP	33	5%	1/16W
R1149	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1151	1-218-935-11	RES-CHIP	33	5%	1/16W
R1153	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1166	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1167	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R1168	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1169	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R1170	1-218-935-11	RES-CHIP	33	5%	1/16W
R1171	1-218-940-11	RES-CHIP	82	5%	1/16W
R1172	1-218-933-11	RES-CHIP	22	5%	1/16W
R1173	1-218-940-11	RES-CHIP	82	5%	1/16W
R1174	1-218-933-11	RES-CHIP	22	5%	1/16W
R1175	1-218-933-11	RES-CHIP	22	5%	1/16W
R1176	1-218-940-11	RES-CHIP	82	5%	1/16W
R1177	1-218-935-11	RES-CHIP	33	5%	1/16W
R1178	1-218-935-11	RES-CHIP	33	5%	1/16W
R1179	1-218-940-11	RES-CHIP	82	5%	1/16W
R1180	1-218-933-11	RES-CHIP	22	5%	1/16W
R1181	1-218-940-11	RES-CHIP	82	5%	1/16W
R1182	1-218-933-11	RES-CHIP	22	5%	1/16W
R1183	1-218-933-11	RES-CHIP	22	5%	1/16W
R1184	1-218-940-11	RES-CHIP	82	5%	1/16W
R1185	1-218-935-11	RES-CHIP	33	5%	1/16W
R1198	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1201	1-216-864-11	SHORT CHIP	0		
R1204	1-218-941-81	RES-CHIP	100	5%	1/16W
R1205	1-218-933-11	RES-CHIP	22	5%	1/16W
R1210	1-218-937-11	RES-CHIP	47	5%	1/16W
R1211	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1212	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1213	1-218-959-11	RES-CHIP	3.3K	5%	1/16W
R1214	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1219	1-218-990-11	SHORT CHIP	0		
R1223	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1226	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1229	1-218-953-11	RES-CHIP	1K	5%	1/16W
R1230	1-208-635-11	RES-CHIP	10	5%	1/16W
R1236	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1254	1-218-990-11	SHORT CHIP	0		
R1271	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1274	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1275	1-218-939-11	RES-CHIP	68	5%	1/16W
R1276	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1277	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1279	1-218-938-11	RES-CHIP	56	5%	1/16W
R1281	1-218-937-11	RES-CHIP	47	5%	1/16W
R1289	1-218-937-11	RES-CHIP	47	5%	1/16W
R1290	1-218-937-11	RES-CHIP	47	5%	1/16W
R1291	1-218-937-11	RES-CHIP	47	5%	1/16W
R1292	1-218-937-11	RES-CHIP	47	5%	1/16W
R1301	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1302	1-218-957-11	RES-CHIP	2.2K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R1303	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1304	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1305	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1306	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R1308	1-218-933-11	RES-CHIP	22	5%	1/16W
R1310	1-218-933-11	RES-CHIP	22	5%	1/16W
R1312	1-218-933-11	RES-CHIP	22	5%	1/16W
R1314	1-218-933-11	RES-CHIP	22	5%	1/16W
R1316	1-218-933-11	RES-CHIP	22	5%	1/16W
R1318	1-218-933-11	RES-CHIP	22	5%	1/16W
R1319	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R1320	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R1321	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R1322	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R1324	1-218-990-11	SHORT CHIP	0		
R1329	1-218-990-11	SHORT CHIP	0		
R1330	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R1331	1-208-860-81	METAL CHIP	75	0.5%	1/16W
R1332	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1338	1-218-990-11	SHORT CHIP	0		
R1339	1-218-990-11	SHORT CHIP	0		
R1340	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1341	1-218-958-11	METAL CHIP	2.7K	0.5%	1/16W
R1342	1-218-958-11	METAL CHIP	2.7K	0.5%	1/16W
R1343	1-218-958-11	METAL CHIP	2.7K	0.5%	1/16W
R1344	1-218-990-11	SHORT CHIP	0		
R1345	1-218-990-11	SHORT CHIP	0		
R1346	1-218-958-11	METAL CHIP	2.7K	0.5%	1/16W
R1347	1-218-958-11	METAL CHIP	2.7K	0.5%	1/16W
R1348	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1349	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1351	1-218-958-11	METAL CHIP	2.7K	0.5%	1/16W
R1353	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1356	1-218-938-11	RES-CHIP	56	5%	1/16W
R1359	1-218-938-11	RES-CHIP	56	5%	1/16W
R1362	1-218-938-11	RES-CHIP	56	5%	1/16W
R1363	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1364	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1366	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1382	1-216-803-11	METAL CHIP	33	5%	1/10W
R1383	1-216-803-11	METAL CHIP	33	5%	1/10W
R1384	1-216-803-11	METAL CHIP	33	5%	1/10W
R1385	1-216-803-11	METAL CHIP	33	5%	1/10W
R1386	1-216-803-11	METAL CHIP	33	5%	1/10W
R1387	1-216-803-11	METAL CHIP	33	5%	1/10W
R1388	1-216-803-11	METAL CHIP	33	5%	1/10W
R1389	1-216-803-11	METAL CHIP	33	5%	1/10W
R1390	1-216-803-11	METAL CHIP	33	5%	1/10W
R1391	1-216-803-11	METAL CHIP	33	5%	1/10W
R1392	1-216-803-11	METAL CHIP	33	5%	1/10W
R1393	1-218-937-11	RES-CHIP	47	5%	1/16W
R1395	1-218-937-11	RES-CHIP	47	5%	1/16W
R1396	1-218-990-11	SHORT CHIP	0		
R1446	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1466	1-218-935-11	RES-CHIP	33	5%	1/16W
R1470	1-218-938-11	RES-CHIP	56	5%	1/16W
R1472	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1474	1-218-937-11	RES-CHIP	47	5%	1/16W
R1508	1-218-941-81	RES-CHIP	100	5%	1/16W
R1512	1-218-990-11	SHORT CHIP	0		

Ref. No.	Part No.	Description			Remarks
R1603	1-218-941-81	RES-CHIP	100	5%	1/16W
R1604	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1605	1-218-965-11	RES-CHIP	10K	5%	1/16W
R1704	1-218-935-11	RES-CHIP	33	5%	1/16W
R1705	1-218-935-11	RES-CHIP	33	5%	1/16W
R1706	1-218-935-11	RES-CHIP	33	5%	1/16W
R1707	1-218-935-11	RES-CHIP	33	5%	1/16W
R1709	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1710	1-218-938-11	RES-CHIP	56	5%	1/16W
R1712	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1713	1-218-938-11	RES-CHIP	56	5%	1/16W
R1714	1-218-935-11	RES-CHIP	33	5%	1/16W
R1716	1-218-935-11	RES-CHIP	33	5%	1/16W
R1717	1-218-939-11	RES-CHIP	68	5%	1/16W
R1720	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1721	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1729	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1730	1-218-940-11	RES-CHIP	82	5%	1/16W
R1732	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1733	1-218-940-11	RES-CHIP	82	5%	1/16W
R1735	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1736	1-218-939-11	RES-CHIP	68	5%	1/16W
R1738	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1739	1-218-938-11	RES-CHIP	56	5%	1/16W
R1741	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1742	1-218-939-11	RES-CHIP	68	5%	1/16W
R1744	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1745	1-218-940-11	RES-CHIP	82	5%	1/16W
R1747	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R1748	1-218-939-11	RES-CHIP	68	5%	1/16W
R1753	1-216-819-11	METAL CHIP	680	5%	1/10W
R1803	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1804	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1810	1-216-817-11	METAL CHIP	470	5%	1/10W
R1818	1-216-821-11	METAL CHIP	1K	5%	1/10W
R1901	1-218-990-11	SHORT CHIP	0		
R1903	1-218-990-11	SHORT CHIP	0		
R1904	1-216-295-91	SHORT CHIP	0		
R1905	1-218-990-11	SHORT CHIP	0		
R1906	1-218-990-11	SHORT CHIP	0		
R1907	1-218-990-11	SHORT CHIP	0		
R1908	1-218-990-11	SHORT CHIP	0		
R1909	1-218-990-11	SHORT CHIP	0		
R1910	1-218-990-11	SHORT CHIP	0		
R1911	1-218-990-11	SHORT CHIP	0		
R1912	1-218-990-11	SHORT CHIP	0		
R1913	1-218-990-11	SHORT CHIP	0		
R1914	1-218-990-11	SHORT CHIP	0		
R1915	1-218-990-11	SHORT CHIP	0		
R1916	1-218-990-11	SHORT CHIP	0		
R1917	1-218-990-11	SHORT CHIP	0		
R1918	1-216-864-11	SHORT CHIP	0		
R1919	1-216-864-11	SHORT CHIP	0		
R2101	1-218-990-11	SHORT CHIP	0		
R2115	1-218-937-11	RES-CHIP	47	5%	1/16W
R2138	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2139	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2140	1-218-939-11	RES-CHIP	68	5%	1/16W
R2141	1-218-939-11	RES-CHIP	68	5%	1/16W
R2142	1-218-939-11	RES-CHIP	68	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R2143	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2144	1-218-939-11	RES-CHIP	68	5%	1/16W
R2145	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2146	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2147	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2151	1-218-938-11	RES-CHIP	56	5%	1/16W
R2152	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2153	1-218-937-11	RES-CHIP	47	5%	1/16W
R2154	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2155	1-218-937-11	RES-CHIP	47	5%	1/16W
R2156	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2157	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2158	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2159	1-218-973-11	RES-CHIP	47K	5%	1/16W
R2162	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R2163	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R2164	1-208-927-11	METAL CHIP	47K	0.5%	1/16W
R2167	1-218-942-11	RES-CHIP	120	5%	1/16W
R2175	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2176	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2177	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2178	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2179	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2180	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2181	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2182	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2183	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2184	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2185	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2188	1-216-168-11	RES-CHIP	56	5%	1/8W
R2190	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2191	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2193	1-218-957-11	RES-CHIP	2.2K	5%	1/16W
R2194	1-218-935-11	RES-CHIP	33	5%	1/16W
R2195	1-208-949-11	METAL CHIP	390K	0.5%	1/16W
R2196	1-218-985-11	METAL CHIP	470K	0.5%	1/16W
R2205	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2206	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2209	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2210	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2211	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2212	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2213	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2214	1-218-965-11	RES-CHIP	10K	5%	1/16W
R2216	1-208-910-11	METAL CHIP	9.1K	0.5%	1/16W
R2217	1-218-938-11	METAL CHIP	56	0.5%	1/16W
R2218	1-218-938-11	METAL CHIP	56	0.5%	1/16W
R2220	1-218-938-11	METAL CHIP	56	0.5%	1/16W
R2221	1-218-938-11	METAL CHIP	56	0.5%	1/16W
R2222	1-218-864-11	METAL CHIP	5.1K	0.5%	1/16W
R2223	1-216-864-11	SHORT CHIP	0		
R2224	1-216-864-11	SHORT CHIP	0		
R2225	1-216-864-11	SHORT CHIP	0		
R2227	1-218-990-11	SHORT CHIP	0		
R3102	1-218-938-11	RES-CHIP	56	5%	1/16W
R3103	1-218-938-11	RES-CHIP	56	5%	1/16W
R3104	1-218-937-11	RES-CHIP	47	5%	1/16W
R3107	1-218-935-11	RES-CHIP	33	5%	1/16W
R3110	1-218-938-11	RES-CHIP	56	5%	1/16W
R3111	1-218-938-11	RES-CHIP	56	5%	1/16W
R3112	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3118	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3119	1-218-938-11	RES-CHIP	56	5%	1/16W
R3122	1-218-941-81	RES-CHIP	100	5%	1/16W
R3123	1-218-935-11	RES-CHIP	33	5%	1/16W
R3125	1-218-955-11	RES-CHIP	1.5K	5%	1/16W
R3126	1-218-938-11	RES-CHIP	56	5%	1/16W
R3127	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3128	1-218-936-11	RES-CHIP	39	5%	1/16W
R3135	1-218-990-11	SHORT CHIP	0		
R3136	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3140	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3143	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3150	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3153	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3155	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3156	1-218-938-11	RES-CHIP	56	5%	1/16W
R3157	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3159	1-218-937-11	RES-CHIP	47	5%	1/16W
R3160	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3163	1-218-938-11	RES-CHIP	56	5%	1/16W
R3165	1-218-938-11	RES-CHIP	56	5%	1/16W
R3166	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3167	1-218-937-11	RES-CHIP	47	5%	1/16W
R3168	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3170	1-218-938-11	RES-CHIP	56	5%	1/16W
R3172	1-218-938-11	RES-CHIP	56	5%	1/16W
R3173	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3177	1-218-939-11	RES-CHIP	68	5%	1/16W
R3178	1-218-937-11	RES-CHIP	47	5%	1/16W
R3179	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3180	1-218-938-11	RES-CHIP	56	5%	1/16W
R3181	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3182	1-218-937-11	RES-CHIP	47	5%	1/16W
R3183	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3186	1-218-938-11	RES-CHIP	56	5%	1/16W
R3187	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3189	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3194	1-218-939-11	RES-CHIP	68	5%	1/16W
R3195	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3198	1-218-937-11	RES-CHIP	47	5%	1/16W
R3199	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3201	1-218-938-11	RES-CHIP	56	5%	1/16W
R3202	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3203	1-218-937-11	RES-CHIP	47	5%	1/16W
R3204	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3205	1-218-937-11	RES-CHIP	47	5%	1/16W
R3206	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3207	1-218-938-11	RES-CHIP	56	5%	1/16W
R3208	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3211	1-218-938-11	RES-CHIP	56	5%	1/16W
R3212	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3215	1-218-937-11	RES-CHIP	47	5%	1/16W
R3216	1-218-937-11	RES-CHIP	47	5%	1/16W
R3217	1-218-935-11	RES-CHIP	33	5%	1/16W
R3218	1-218-935-11	RES-CHIP	33	5%	1/16W
R3219	1-218-933-11	RES-CHIP	22	5%	1/16W
R3220	1-218-935-11	RES-CHIP	33	5%	1/16W
R3221	1-218-933-11	RES-CHIP	22	5%	1/16W
R3222	1-218-933-11	RES-CHIP	22	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R3223	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3224	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3225	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3226	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3227	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3228	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3229	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3230	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R3231	1-218-935-11	RES-CHIP	33	5%	1/16W
R3232	1-218-935-11	RES-CHIP	33	5%	1/16W
R3233	1-218-938-11	RES-CHIP	56	5%	1/16W
R3234	1-218-942-11	RES-CHIP	120	5%	1/16W
R3237	1-218-937-11	RES-CHIP	47	5%	1/16W
R3238	1-218-990-11	SHORT CHIP	0		
R3250	1-218-935-11	RES-CHIP	33	5%	1/16W
R3251	1-218-939-11	RES-CHIP	68	5%	1/16W
R3252	1-218-933-11	RES-CHIP	22	5%	1/16W
R3267	1-218-949-11	RES-CHIP	470	5%	1/16W
R3268	1-218-990-11	SHORT CHIP	0		
R3269	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3270	1-218-939-11	RES-CHIP	68	5%	1/16W
R3272	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3274	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3279	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3281	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3282	1-218-990-11	SHORT CHIP	0		
R3287	1-218-939-11	RES-CHIP	68	5%	1/16W
R3293	1-218-937-11	RES-CHIP	47	5%	1/16W
R3294	1-218-937-11	RES-CHIP	47	5%	1/16W
R3295	1-218-990-11	SHORT CHIP	0		
R3296	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3297	1-218-938-11	RES-CHIP	56	5%	1/16W
R3298	1-218-938-11	RES-CHIP	56	5%	1/16W
R3299	1-218-937-11	RES-CHIP	47	5%	1/16W
R3301	1-218-938-11	RES-CHIP	56	5%	1/16W
R3302	1-218-938-11	RES-CHIP	56	5%	1/16W
R3304	1-218-938-11	RES-CHIP	56	5%	1/16W
R3305	1-218-938-11	RES-CHIP	56	5%	1/16W
R3306	1-218-938-11	RES-CHIP	56	5%	1/16W
R3307	1-218-938-11	RES-CHIP	56	5%	1/16W
R3308	1-218-935-11	RES-CHIP	33	5%	1/16W
R3313	1-216-864-11	SHORT CHIP	0		
R3315	1-218-990-11	SHORT CHIP	0		
R3316	1-218-938-11	RES-CHIP	56	5%	1/16W
R3317	1-218-938-11	RES-CHIP	56	5%	1/16W
R3318	1-218-939-11	RES-CHIP	68	5%	1/16W
R3319	1-218-935-11	RES-CHIP	33	5%	1/16W
R3504	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3507	1-218-990-11	SHORT CHIP	0		
R3512	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3513	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3514	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3520	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3529	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3530	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3534	1-216-864-11	SHORT CHIP	0		
R3535	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3537	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3538	1-218-965-11	RES-CHIP	10K	5%	1/16W
R3540	1-218-965-11	RES-CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R3810	1-218-990-11	SHORT CHIP	0		
R3811	1-218-935-11	RES-CHIP	33	5%	1/16W
R3812	1-218-935-11	RES-CHIP	33	5%	1/16W
R3813	1-218-935-11	RES-CHIP	33	5%	1/16W
R3814	1-218-935-11	RES-CHIP	33	5%	1/16W
R3822	1-218-990-11	SHORT CHIP	0		
R3823	1-218-990-11	SHORT CHIP	0		
R3824	1-218-990-11	SHORT CHIP	0		
R3825	1-218-935-11	RES-CHIP	33	5%	1/16W
R3827	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4104	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4111	1-208-635-11	RES-CHIP	10	5%	1/16W
R4302	1-218-990-11	SHORT CHIP	0		
R4310	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4311	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4312	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4313	1-218-935-11	RES-CHIP	33	5%	1/16W
R4314	1-218-935-11	RES-CHIP	33	5%	1/16W
R4317	1-218-965-11	RES-CHIP	10K	5%	1/16W
R4319	1-218-937-11	RES-CHIP	47	5%	1/16W
R4320	1-218-937-11	RES-CHIP	47	5%	1/16W
R4321	1-218-937-11	RES-CHIP	47	5%	1/16W
R4322	1-218-937-11	RES-CHIP	47	5%	1/16W
R4329	1-218-935-11	RES-CHIP	33	5%	1/16W
R4331	1-218-935-11	RES-CHIP	33	5%	1/16W
R4332	1-218-935-11	RES-CHIP	33	5%	1/16W
R4334	1-218-935-11	RES-CHIP	33	5%	1/16W
R4335	1-218-935-11	RES-CHIP	33	5%	1/16W
R4336	1-218-935-11	RES-CHIP	33	5%	1/16W
R4337	1-218-935-11	RES-CHIP	33	5%	1/16W
R4338	1-208-635-11	RES-CHIP	10	5%	1/16W
R4339	1-218-935-11	RES-CHIP	33	5%	1/16W
R4340	1-208-635-11	RES-CHIP	10	5%	1/16W
R4341	1-218-935-11	RES-CHIP	33	5%	1/16W
R4342	1-208-635-11	RES-CHIP	10	5%	1/16W
R4343	1-208-635-11	RES-CHIP	10	5%	1/16W
R4344	1-218-935-11	RES-CHIP	33	5%	1/16W
R4349	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4350	1-218-953-11	RES-CHIP	1K	5%	1/16W
R4351	1-218-990-11	SHORT CHIP	0		
R4352	1-218-990-11	SHORT CHIP	0		
R4353	1-216-864-11	SHORT CHIP	0		
R5202	1-218-933-11	RES-CHIP	22	5%	1/16W
R5207	1-208-635-11	RES-CHIP	10	5%	1/16W
R5208	1-218-961-11	RES-CHIP	4.7K	5%	1/16W
R5210	1-218-939-11	RES-CHIP	68	5%	1/16W
R5211	1-218-965-11	RES-CHIP	10K	5%	1/16W
R5212	1-218-938-11	RES-CHIP	56	5%	1/16W
R5213	1-218-939-11	RES-CHIP	68	5%	1/16W
R5215	1-218-937-11	RES-CHIP	47	5%	1/16W
R5224	1-218-990-11	SHORT CHIP	0		

< COMPOSITION CIRCUIT BLOCK >

RB103	1-242-963-21	RES, NETWORK 33X4	(1005)
RB104	1-234-714-11	RES, NETWORK 56X4	(1005)
RB105	1-242-963-21	RES, NETWORK 33X4	(1005)
RB107	1-242-963-21	RES, NETWORK 33X4	(1005)
RB108	1-242-963-21	RES, NETWORK 33X4	(1005)

Ref. No.	Part No.	Description		Remarks
RB109	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB110	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB111	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB112	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB113	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB114	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB115	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB116	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB117	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB121	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB122	1-234-377-21	RES, NETWORK 4.7KX4	(1005)	
RB123	1-234-377-21	RES, NETWORK 4.7KX4	(1005)	
RB124	1-234-377-21	RES, NETWORK 4.7KX4	(1005)	
RB125	1-234-377-21	RES, NETWORK 4.7KX4	(1005)	
RB126	1-234-377-21	RES, NETWORK 4.7KX4	(1005)	
RB127	1-234-377-21	RES, NETWORK 4.7KX4	(1005)	
RB128	1-234-377-21	RES, NETWORK 4.7KX4	(1005)	
RB129	1-234-377-21	RES, NETWORK 4.7KX4	(1005)	
RB130	1-234-372-21	RES, NETWORK 100X4	(1005)	
RB131	1-234-372-21	RES, NETWORK 100X4	(1005)	
RB132	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB301	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB302	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB303	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB304	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB305	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB306	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB307	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB308	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB309	1-234-714-11	RES, NETWORK 56X4	(1005)	
RB310	1-234-714-11	RES, NETWORK 56X4	(1005)	
RB311	1-234-714-11	RES, NETWORK 56X4	(1005)	
RB312	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB313	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB314	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB315	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB316	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB317	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB318	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB319	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB320	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB321	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB322	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB323	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB326	1-234-714-11	RES, NETWORK 56X4	(1005)	
RB328	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB329	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB330	1-234-714-11	RES, NETWORK 56X4	(1005)	
RB331	1-234-714-11	RES, NETWORK 56X4	(1005)	
RB332	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB333	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB336	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB337	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB338	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB339	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB352	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB353	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB354	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB355	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB356	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB357	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB358	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB359	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB360	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB361	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB382	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB383	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB384	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB385	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB386	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB387	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB388	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB389	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB390	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB403	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB404	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB701	1-234-370-21	RES, NETWORK 22X4	(1005)	
RB702	1-234-370-21	RES, NETWORK 22X4	(1005)	
RB801	1-234-400-21	CONDUCTOR, NETWORK	(2010)	
RB802	1-234-400-21	CONDUCTOR, NETWORK	(2010)	
RB803	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB804	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB807	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB808	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB809	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB810	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB901	1-234-377-21	RES, NETWORK 4.7KX4	(1005)	
RB902	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB903	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB904	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB905	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB906	1-234-378-21	RES, NETWORK 10KX4	(1005)	
RB1101	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1102	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1103	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1104	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1105	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1106	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1107	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1108	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1109	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1110	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1121	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB1122	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB1123	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1124	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1125	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1126	1-242-963-21	RES, NETWORK 33X4	(1005)	
RB1201	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB1202	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB1203	1-234-400-21	CONDUCTOR, NETWORK	(2010)	
RB1204	1-234-400-21	CONDUCTOR, NETWORK	(2010)	
RB1205	1-234-400-21	CONDUCTOR, NETWORK	(2010)	
RB1206	1-234-400-21	CONDUCTOR, NETWORK	(2010)	
RB1307	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB1308	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB1309	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB1310	1-234-702-11	RES, NETWORK 68X4	(1005)	
RB1311	1-234-371-21	RES, NETWORK 47X4	(1005)	
RB1312	1-234-371-21	RES, NETWORK 47X4	(1005)	

Ref. No.	Part No.	Description			Remarks
RB1313	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB1314	1-242-963-21	RES, NETWORK 33X4	(1005)		
RB1316	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1317	1-234-702-11	RES, NETWORK 68X4	(1005)		
RB1318	1-234-702-11	RES, NETWORK 68X4	(1005)		
RB1319	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1320	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1321	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1322	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1323	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1324	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1325	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1326	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1327	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1328	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1329	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1330	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1331	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1332	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1333	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB1334	1-234-371-21	RES, NETWORK 47X4	(1005)		
RB2102	1-234-702-11	RES, NETWORK 68X4	(1005)		
RB2103	1-234-702-11	RES, NETWORK 68X4	(1005)		
RB2104	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2106	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2107	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2108	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2109	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2110	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2111	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2112	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2113	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2114	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2115	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2116	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2117	1-234-378-21	RES, NETWORK 10KX4	(1005)		
RB2118	1-234-378-21	RES, NETWORK 10KX4	(1005)		
		< THERMISTOR >			
TH1901	1-803-384-11	THERMISTOR (1608)			
		< VIBRATOR >			
X102	1-795-885-21	VIBRATOR, CRYSTAL (SMD)			
X701	1-795-545-21	VIBRATOR,CRYSTAL (SMD)	14.31818M		
X1701	1-781-867-21	VIBRATOR, CRYSTAL			
X2201	1-795-886-21	VIBRATOR, CRYSTAL (SMD)			
		TX-003 COMPL (NOT SUPPLIED)			
		**********			
		< CAPACITOR >			
C1000	1-126-947-11	ELECT	47uF	20.00% 16V	
C1001	1-126-964-11	ELECT	10uF	20.00% 50V	
C1002	1-126-947-11	ELECT	47uF	20.00% 16V	
C1003	1-126-947-11	ELECT	47uF	20.00% 16V	
C1004	1-109-982-11	CERAMIC CHIP	1uF	10.00% 10V	

Ref. No.	Part No.	Description			Remarks
C1005	1-163-133-21	CERAMIC CHIP	470PF	5.00% 50V	
C1006	1-163-255-11	CERAMIC CHIP	150PF	5.00% 50V	
C1007	1-107-725-11	CERAMIC CHIP	0.1uF	10.00% 16V	
C1009	1-163-021-91	CERAMIC CHIP	0.01uF	10.00% 50V	
C1010	1-125-838-11	CERAMIC CHIP	2.2uF	10% 6.3V	
C1011	1-126-947-11	ELECT	47uF	20.00% 16V	
C1012	1-126-947-11	ELECT	47uF	20.00% 16V	
C1013	1-163-031-91	CERAMIC CHIP	0.01uF	50V	
C1014	1-163-031-91	CERAMIC CHIP	0.01uF	50V	
C1015	1-163-031-91	CERAMIC CHIP	0.01uF	50V	
C1016	1-163-031-91	CERAMIC CHIP	0.01uF	50V	
C1017	1-163-031-91	CERAMIC CHIP	0.01uF	50V	
C1018	1-163-235-11	CERAMIC CHIP	22PF	5.00% 50V	
C1019	1-163-235-11	CERAMIC CHIP	22PF	5.00% 50V	
C1020	1-163-031-91	CERAMIC CHIP	0.01uF	50V	
C1050	1-163-031-91	CERAMIC CHIP	0.01uF	50V	
		< IC >			
IC1000	8-759-837-19	IC MM1562FFBE			
IC1001	6-804-606-01	IC SDA5555-PO-A077			
		< JUMPER RESISTOR >			
JR1000	1-216-296-11	SHORT CHIP	0		
JR1001	1-216-296-11	SHORT CHIP	0		
JR1002	1-216-296-11	SHORT CHIP	0		
JR1003	1-216-296-11	SHORT CHIP	0		
JR1004	1-216-296-11	SHORT CHIP	0		
JR1005	1-216-296-11	SHORT CHIP	0		
JR1007	1-216-296-11	SHORT CHIP	0		
JR1008	1-216-296-11	SHORT CHIP	0		
JR1011	1-216-296-11	SHORT CHIP	0		
JR1012	1-216-296-11	SHORT CHIP	0		
JR1014	1-216-296-11	SHORT CHIP	0		
JR1015	1-216-296-11	SHORT CHIP	0		
JR1022	1-216-296-11	SHORT CHIP	0		
JR1024	1-216-296-11	SHORT CHIP	0		
JR1025	1-216-296-11	SHORT CHIP	0		
JR1029	1-216-296-11	SHORT CHIP	0		
JR1030	1-216-296-11	SHORT CHIP	0		
JR1031	1-216-296-11	SHORT CHIP	0		
JR1032	1-216-296-11	SHORT CHIP	0		
JR1033	1-216-296-11	SHORT CHIP	0		
JR1034	1-216-296-11	SHORT CHIP	0		
		< COIL >			
L1000	1-469-967-21	INDUCTOR	10uH		
L1001	1-469-967-21	INDUCTOR	10uH		
L1002	1-412-950-11	INDUCTOR	8.2uH		
L1003	1-469-967-21	INDUCTOR	10uH		
L1004	1-469-967-21	INDUCTOR	10uH		
		< TRANSISTOR >			
Q1000	8-729-422-27	TRANSISTOR 2SD601A-QRS-TX			
Q1001	8-719-012-57	TRANSISTOR 2SK1399-T1B			
Q1002	8-719-012-57	TRANSISTOR 2SK1399-T1B			
Q1003	8-719-012-57	TRANSISTOR 2SK1399-T1B			

Ref. No.	Part No.	Description			Remarks
		< RESISTOR >			
R1002	1-216-295-91	SHORT CHIP	0		
R1004	1-216-085-91	RES-CHIP	33K	5%	1/10W
R1005	1-216-085-91	RES-CHIP	33K	5%	1/10W
R1006	1-216-025-11	RES-CHIP	100	5%	1/10W
R1007	1-216-041-11	RES-CHIP	470	5%	1/10W
R1008	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1009	1-216-037-11	RES-CHIP	330	5%	1/10W
R1010	1-216-073-91	RES-CHIP	10K	5%	1/10W
R1011	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1012	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1013	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1014	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1019	1-216-065-91	RES-CHIP	4.7K	5%	1/10W
R1020	1-216-073-91	RES-CHIP	10K	5%	1/10W
R1021	1-216-077-91	RES-CHIP	15K	5%	1/10W
R1025	1-216-295-91	SHORT CHIP	0		
		< VIBRATOR >			
X1000	1-795-884-11	VIBRATOR, CRYSTAL (6MHz)			

ACCESSORIES
****

2-050-330-11	MANUAL, INSTRUCTION (ENGLISH) (UK)
2-050-330-21	MANUAL, INSTRUCTION (FRENCH) (AEP)
2-050-330-31	MANUAL, INSTRUCTION (GERMAN) (AEP)
2-050-330-41	MANUAL, INSTRUCTION (SPANISH) (AEP)
2-050-330-51	MANUAL, INSTRUCTION (ITALIAN) (AEP)
2-050-330-61	MANUAL, INSTRUCTION (DUTCH) (AEP)
1-696-593-11	CORD, CONNECTION (NTSC)
1-751-271-71	CORD, CONNECTION (AV)
1-575-131-82	CORD, POWER (AEP)
1-827-269-11	CORD, POWER (UK)
1-478-723-11	REMOTE COMMANDER (RMT-D206P)
3-071-119-91	LID,BATTERY (FOR RMT-D206P)
3-087-256-41	DOOR,SLIDE (FOR RMT-D206P)

9-874-821-11

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